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The Paper Trade Journal.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIII.—NO. 46. NEW YORK, NOVEMBER 17, 1894. WHOLE NUMBER 1072.

Trade Topics.

Turbine Water Wheels.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Sanford E. Thompson.

It is not the object in this article to consider the subject of turbine water wheels from a theoretical standpoint, but rather to give a few practical hints relating to the choice and the testing of wheels, and to the construction of canals and flumes. The first water wheels which could properly be called turbines were patented about sixty years ago. Prior to this there were numerous styles of wheels with horizontal axes in use. We occasionally see these old-fashioned wheels on small powers and it may not be out of place to devote a short space to their consideration.

We may classify these horizontal wheels, omitting entirely for the present the modern horizontal turbine, in four groups.

1. Undershot wheels. In these the water is let on to the wheel under the 45° radius. That is, suppose we draw a line from the axis downward at an angle of 45° with the vertical, the water will strike the buckets below the point at which this line crosses the circumference. A regular undershot wheel is provided with curved buckets, but the simple paddle wheel also belongs to this group.

2. Breast wheels. These are similar to the undershot wheels except that the water is let on to them between the 45° radius and the 135° radius, the angles being measured from the vertical.

3. Backshot wheels. This style takes the water above the upper 45° radius. The buckets are shaped in the same direction as in the wheels last described, and the direction of revolution is the same; that is, supposing the water to come from the left the wheel will revolve to the left or in the opposite direction from that in which the hands of a watch run.

4. Overshot wheels. The water strikes above the upper 45° radii, but the buckets are shaped in the reverse direction from the three classes previously described, and the wheel turns in the opposite direction.

The maximum theoretical work which any water wheel could perform, supposing there should be no losses from friction or other causes, is equal to the weight of the water consumed, multiplied by the head. This is true for all classes of wheels, whether turbines or wheels belonging to the classes described above. The efficiency of a water wheel at a certain gate-opening is the ratio of the work actually performed at this gate-opening to the theoretical work which could be done by the same quantity of water falling a height equal to the head on the wheel. To illustrate: suppose that we have a turbine wheel which uses 2,500 cubic feet of water per minute under a head of 15 feet and that this turbine develops 56 horse power by actual test. The theoretical power of the quantity of water used at the given head, assuming the weight of 1 cubic foot of water to be 62.3 pounds, is:

$$\frac{2{,}500 \times 62.3 \times 15}{33{,}000} = 71 \text{ horse power.}$$

Hence the efficiency is:

$$\frac{56}{71} = 79 \text{ per cent.}$$

The disadvantages of the old-fashioned wheels running on horizontal axes are not only that they are cumbersome and require a large amount of room, but also because there are large losses from friction, and also losses in head when the water leaves and enters the wheel. Ordinary undershot wheels give an efficiency of from 40 to 60 per cent., while paddle wheels give as low as 15 per cent. There is loss of energy on entering the undershot wheel and a loss on leaving it, the latter being due to the velocity of the water as it leaves the wheel, which is equal to the velocity of the circumference. For a given wheel there is a certain velocity which will give a maximum efficiency. Breast wheels are similar to undershot wheels in action, but they give a somewhat higher efficiency, ranging from 50 to 80 per cent. The efficiency of an overshot wheel may run as high as 70 to 90 per cent. There is a loss of head on entering and also on leaving this wheel. There is a certain speed for each wheel which will give a maximum efficiency.

The turbines manufactured until up to within a few years gave a fairly high efficiency at full gate, but a low efficiency at half gate. The various manufacturers of the standard wheels have now by numerous series of experiments so improved the shape of the buckets and the general design of their wheels, that many of the styles now made give nearly as high an efficiency at part gate as at full gate. Many of the water power companies charge for the power by the amount of water actually used. Where this is done it is especially important that the efficiency shall be high, whether the gate is wide open or when partly closed.

The Holyoke Water Power Company, of Holyoke, Mass., has a flume especially arranged for testing turbine wheels, and makes a practice of determining the efficiency, at various gate openings, of any wheels which may be sent to it. When ordering a wheel one must be chosen which is not only of high efficiency, but whose general design is good. It is not usually safe to award the contract to the lowest bidder. Some wheels will clog more easily than others, while some are made so light that they are easily broken. The wheels should be controlled by a governor, which can be depended upon to quickly open and shut the gate, and which is not so complicated that it will readily get out of order. Very often a lack of power in the mill is laid to the water wheels, when the trouble really is due to very different causes. The mill owner will often measure his head from the level of the water above the headrace to the level in the river outside of the tailrace, and wonder why with so large a fall he is getting such a small amount of power. The fault may not be with the wheels, but with the fact that his races, penstocks or wheel pits are so small that the water is backed up and head is lost. In other cases the fault may lie within the mill. The line shafting may be so much out of line or out of level that it is using up a large percentage of the power, or the wheel shaft may be in poor alignment.

(To be continued.)

Fraudulent Recommendations.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

"The question how far merchants are responsible for the character which they give each other," said Chief Justice Marshall, "is one of much delicacy, and of much importance to the commercial world." In the sixty years which have transpired since these words were uttered their vitality has not lessened, while the field of their application has materially grown.

The principal change in the law on this subject from the common law is that many States have enacted statutes providing that in order to bind a person upon representations as to the credit, skill or character of a third party, such representation or a memorandum thereof must be in writing, and either subscribed by him or be in the handwriting of the party to be charged.

The gist of the action is fraud in the party making the recommendation and damage to the party to whom it is made. Fraud means an intention to deceive. If there was no such intention, and if the party honestly stated his own opinion, believing at the same time that he stated the truth, he is not liable for deceit, although the representation turned out to be entirely untrue. The existence of this intention is a matter of fact for the jury to determine.

Fraud is never presumed, and must be shown by satisfactory proof; but it has been well said that a recommendation known to be false at the time would be fraudulent. The representation must be known to be untrue by the party making it; but if in a position to know, he will be held responsible for stating as fact that which was not so, and which he should have known was untrue, as by the weight of modern authority it is held that the law imputes an intention to deceive in every case where one recklessly asserts that to be true which is untrue, and concerning which he pretends to have a knowledge which he has not.

A person cannot maintain an action for deceit where no harm has come to him. It must therefore be shown that he relied upon the representations made, and it is no excuse that he had recommendations from other parties to the same subject, for he might not have acted upon the recommendations of the other. Nor is it a defense that he could have ascertained the true condition by further investigation, as he had a right to rely upon the statements of anyone asserting that he knew the facts.

The general rule is that the statements must be of fact and not merely of opinion, and one would hardly rely upon the latter, as proof of falsity of facts might not prove fraudulent intent in the assertion of the opinion. The statements therefore must be as to a past or present condition, and representations having reference merely to the future, however much relied on, constitute no ground of action.

It is not essential that there should be any resulting benefit to the writer himself, although in the minds of some the damage to another might be so construed. Misrepresentations of this character are frequently made from inconsiderate good nature, prompting a desire to benefit a third person and without a view of advancing the party's own interest. The motives by which he was actuated do not enter into the inquiry.

If he makes representations productive of loss to another, knowing such representations to be false, he is responsible as for a fraudulent deceit.

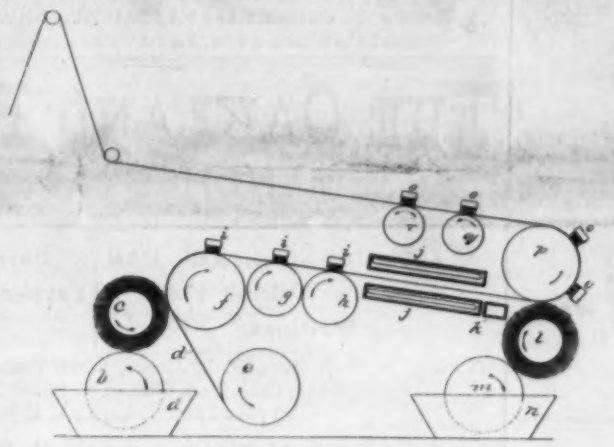
Such representations as to the financial responsibility of another for the purpose of procuring him credit are actionable, although they contain no statement as to the amount of credit it is safe to extend. This probably would be modified by circumstances connected with the entire transaction, and it is doubtful if one could recover where the amount of credit was far in excess of the ordinary course of business. Such representations may be general or special, and where addressed to a particular party would not create a liability with anyone else to whom it may be shown. So a commercial agency would not be responsible to others than its subscribers, acting on a report of a merchant's standing, no matter how false it might be, as it makes its statements in a special relation, for a consideration, which would not exist between it and the general public.

The action may also be maintained against a corporation whose officers have made such recommendations, and it matters not that the letter or statement was made over the signature of the officer, and not in the name of the company, if it appears from the circumstances that he acted in his official capacity, and this was implied where the cashier replied in his own name to an inquiry addressed to his bank.

Machine for Enameling Paper.

An illustration is given of a new machine for enameling or otherwise coating both sides of a web of paper.

It is the object of the invention to provide a mode of and means for surface coating paper which shall be at once efficient by way of thoroughly and evenly coating the paper, and exceedingly simple in its construction and mode of operation, so as to reduce the cost to a minimum. The mode of procedure embraces the steps of first applying the enamel or coating to one side of the web, spreading or distributing it easily thereon, drying the web, applying a blast of cold air to the uncoated side to temper the same to the condition of the opposite side at the time of coating the same, applying enamel or coating to the uncoated side and spreading or distributing it evenly thereon, and again drying the web and winding the same into a roll.



Machine for Enameling Paper.

The trough or reservoir *a* shown in the cut contains the enamel or other coating to be applied to the paper.

In the trough there is arranged a roll, *b*, which runs in the coating substance and conveys a film to a rotary brush *c*, which applies it to one side of a web or sheet of paper, *d*, drawn from a roll, *e*.

The coating is applied by the brush *c* to one side of the web as it passes around a roll, *f*, it being understood that the brush *c* runs in contact with the roll *b* and the web *d* as it is drawn off. The web from the roll *f* passes along over the rolls *g h*. Above the latter rolls, as also the roll *f*, there are arranged longitudinally reciprocating brushes, *i*, which operate on the coated surface of the web to spread or evenly distribute the enamel coating thereover. From the rolls last mentioned and the brushes *i* the web passes between two hot air boxes, *j j*, where it is subjected to a current of hot air in order to dry it. After leaving the drying means, the unenameled side of the web is subjected to a current or blast of cold air from a box, *k*, which tempers the uncoated side so as to bring it into the condition of the coated side before the enamel was applied thereto. The untreated side of the web now has coating applied thereto by a brush, *l*, similar to the brush *c*, receiving the material from a roll, *m*, running in a trough, *n*. The last applied coating material is spread or evenly distributed on the web by longitudinally reciprocating brushes, *o*, operating upon the paper as it passes around rolls, *p q r*.

After both sides of the web have been coated it may be led over guide rolls and dried by the action of the atmosphere in the room or in any other suitable way.

By the process and means described it is said that both sides of a web of paper may be thoroughly and evenly enameled, or otherwise coated, and the work done in a most expeditious and economical manner.

Sulphurous acid possesses marked bleaching power, and this is due to the fact that it forms colorless compounds with the coloring substances. These compounds may often be broken up, and the color restored, by treatment with alkali.

Brick in Construction.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By W. H. Weston.

The kinds and sizes of bricks for use in construction work are so varied as to demand considerable attention if good results and economy are to be secured in building any work of importance. The necessity of having bricks of a standard size is apparent when it is considered that a much greater number must be used per cubic yard if they are not up to a good size; and as they are all bought by the thousand, there may be considerable loss and discrepancy in having bricks of inferior size imposed upon a purchaser.

A quarter of an inch less in one dimension only of a brick will make a great difference in the number required on a large piece of work, and if there should be a quarter of an inch on more than one dimension of a brick the increased number used to construct a certain piece of work will be very great. For instance, take a building which will require in its construction 2,000,000 bricks, each 8¼x4x2 inches, and instead of securing this size the bricks supplied were slightly smaller, so as to make a difference of say 10 per cent. in their cubic contents; the unfairness in selling such brick is apparent. Not only is there extra money spent in this way in buying such a lot of brick, but there is also an extra expense, in the same proportion, in the cost of laying them and also in the amount of mortar or cement required, as the more the brick the greater will be the number of joints to a given extent of wall. All of these things together make quite a difference in the cost of a structure.

The localities of brick making clays are distributed very generally over the world, the quality varying considerably, however. The various clays require somewhat different treatment in manufacture and for turning out finished brick of varying quality as to color, toughness, hardness, porosity, &c. The two prominent brick making clays of importance are those which are pure or fat, and those which contain sand in varying amounts. Other clays have various substances mixed with them, which render them less fit for the production of a good quality of brick.

Clay beds are so located at or near the surface of the ground that their utilization is an easy matter. Those clays which contain oxide of iron burn to a red color, and those containing lime and little iron burn to a white or cream color, making an exceedingly handsome brick for building purposes; but an excess of either iron or lime in a clay makes it unfit for manufacture.

In using pure clays a proportion of sand must be mixed with them, otherwise the brick will warp and crack, while clays which contain too much sand make a brick of little strength and which scales and chips to pieces. The sand used with a pure or fat clay should always be clean and sharp. That from sea beaches is unfit for the purpose on account of its saltness and the round, smooth surface to which it is worn. The good quality of the finished brick depends also on the method and thoroughness of the tempering. The object to be sought is always to secure a perfectly homogeneous and plastic mass with the sand evenly and equally distributed throughout. After the clay has been dumped into the tempering pit or machine it should have a proper amount of water put into it, and when thoroughly soaked the sand should be put in and the tempering or mixing done until the mass is brought to a proper condition, as above stated.

Careful handling during the process of drying is essential if the brick are to be of good shape when completed. Obviously it is of importance to prevent rain from reaching them during the process of drying, which usually takes a few days under favorable conditions and warm weather.

In using clays which are very tough and hard it is usually necessary to break them

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up or pulverize them to a certain extent before they go to the tempering pit. This can be done by passing the material between the rollers of a mill, the clay being first dried to a certain extent to make it work easily.

Pressed brick are taken when partially dry and put into a pressing machine. Then they are again set out to complete their drying. The hand process of molding is a very thorough method of making pressed brick, as by this means the clay is most completely worked at the time of placing it in the molds, and renders them solidly filled with a perfectly uniform and plastic mass. The tempering of clay to be used for pressed brick must be done in the most thorough manner possible.

As to the weight of brickwork, it is when completed, including the mortar, with common thickness of joints, about as follows: For common brick 115 pounds per cubic foot, and for pressed brick 130 pounds per cubic foot.

As to the number of bricks 8¼x4x2 inches which are used on an average in the various thicknesses of wall, they are given usually about as follows:

Thickness of Wall.	No. of Brick.	
13 inches	21	per superficial foot
17 "	28	" " "
21 "	35	" " "
25 "	42	" " "
34 "	56	" " "

The crushing strength of brick and brickwork varies greatly with the various kinds of brick and the various conditions under which the load is applied. Bricks which are tested singly give a strength far in excess of what they would give if tested in a mass, and a brick which is put into the testing machine so as to take the load flatwise will crush at a considerably higher number of pounds per square inch of section than if it is loaded endwise. This extra load sustaining power of a single brick is evidently due to the fact that the iron platforms of the testing machines in which they are tested give a firm support to the surfaces of the brick, and the friction between them is such as to hold the brick from spreading, in a great measure.

In testing bricks, splitting or slivering off of pieces from the sides usually begins at from 60 to 90 per cent. of the crushing load. Testing machine reports show that the ultimate crushing strength of medium and hard bricks per sqnare inch runs from about 5,000 to 15,000 pounds when tested singly; in some instances they give a strength above 15,000, but this is not to be figured on for the strength of brickwork, as the latter will stand a far less load. Probably the best hard burnt bricks in brickwork should not be figured at more than 2,000 pounds per square inch, and a safe working load should not be over one-tenth of this, which would be 200 pounds per square inch, or 15 tons per square foot. Medium hard brick should not be subjected to over 8 or 10 tons. These figures are for brickwork in cement; when in mortar the loads should not be over one-third as much.

The strength of an antichlor is conveniently expressed in terms of the chlorine which it will serve to "kill," reckoned in per cents. on the antichlor tested; 1 c.c. of deci-normal iodine solution is equivalent to 0.00355 grammes of active chlorine in this sense.

Correspondence.

LEE.

[FROM OUR SPECIAL CORRESPONDENT.]

LEE, Mass., November 10, 1894.

The late Elizur Smith was the pioneer and founder of the Lee paper making industries and his history is familiar to the trade in the United States. A quarter of a century ago Lee was the largest single local producer of book, news and manilla papers on this side of the Atlantic; but the building of new fast running machinery, embracing most, if not all, of the modern inventions for the manufacture of these products which has been located in large plants situated on great water powers in Maine, Wisconsin and other States, has completely revolutionized the paper business in Lee in recent years.

To meet this changed condition in profitable paper manufacture the Smith Paper Company, whose present head is the Hon. Wellington Smith, and which is the owner of all of the mills in the eastern part of the town with a single exception, threw up its former specialty products. Taking its two best mills it placed in these new machinery for the manufacture of fine grade tissue copying papers, with which it has made a very marked and gratifying success. In fact the company makes the claim to the finest product of this description in this country, and that its output is fully equal to the best foreign makes.

For the past year this company has been in a measure affected by the general depression in business in marketing this specialty, but for a few weeks past there has been a marked increase in demand. In fact, Mr. Smith says that no other paper product is so quick to be affected by the change of pulsations in general business in all of the varied branches of its consumption, and that the volume of the incoming tide of demand is perceptibly increasing.

The company's other mills are running full time on book, news and manilla orders, drawing their stock supplies from the firm's two pulp mills in the northern portion of the town. This pulp is made from selected spruce timber, which is cut in different portions of the country, transported both by rail and team, and the product is of fine quality.

Mr. Smith is authority that the lowest water conditions ever known in the upper Hoosatonic River have existed within the past six months. During this time the mills have consequently been more largely run by steam than ever.

Owing to the rain and melting snow for the past two weeks, there has been some improvement in the volume of water; but there is a fear that a sudden freeze up may confine the mills to a limited water supply for the winter, in case that season should fail to be open.

Mr. Smith says that the decided voice of the people as expressed in the recent election will prevent any further tariff legislation and will finally settle business and trade; that business men have been given more confidence and will therefore embark in more extensive business operations, which will surely lead to a gradual revival of manufacture and trade in all of its branches.

Eaton, Dikeman & Co.'s mill is a new and prosperous establishment which has been in operation in East Lee for about three years. It is running full with a fair trade, which is steadily and firmly increasing. Its specialty is the "Magnet" and "Columbian" blotting and unsized papers, and being the lower mill in East Lee it mostly depends upon water for motive power.

The mill of Eaton, May & Robbins in South Lee was again started up during the last week in October, and is running full time on typewriting and drawing papers and specialties, with which the firm supplies its "Cox Mill" in Pittsfield.

The mill of Benton Brothers in South Lee is in full operation on fine ledger, and George K. Baird & Brothers, successors to P. C. Baird, are running full time on white and blotting papers.

The next mill south on the Hoosatonic River is that of Charles Callender at Glendale, which is running full time on its specialty of colored manilla papers. The Owen Paper Company's mill at Hoosatonic, which has now been closed for a year on account of the financial difficulties of Mr. Cone, shows no signs of resuming business and its finished product is nearly all closed out.

With all of its water privileges occupied and with the price of coal much higher than in many other localities in the county, the town of Lee promises no future development as a manufacturing centre. Yet the town, with its present paper plants running fully up to capacity, taken in connection with its great white marble quarrying and cutting industry, is shaking off a business depression and lethargy which has seemed to hang over it for the past half dozen years. The Lee marbles, with which the Capitol at Washington and many noted public and business structures in Washington, Philaphia and New York were built, have again taken on a fresh boom, and William Gross, of Lee, and Gray & Sons, of Philadelphia, now have in employ a force of nearly 500 men getting out and cutting huge blocks, which are being shipped to New York for building great business houses. The discovery that edifices built from the product of these quarries years ago have stood the test of atmospheric changes and of time equal to the best granite has again made the Lee marbles popular with builders, and it would seem that the revival in this business, instead of being again sporadic, had come again to prove both steady and permanent. The capability of cutting this fine stone into a host of enduring ornamental shapes at less expense than granite, and with greater artistic possibilities, is also a prominent feature of promise for the future durability of this important Lee industry, Nature having furnished the locality with inexhaustible supplies in the rough.

The principal building in the town for the past year has been a $30,000 white marble high school house on the elevated plateau on the east side of the village, which is nearly ready for occupancy, and the new $10,000 brick block of E. S. Rogers on Main street, into a portion of which he will remove the Lee *Gleaner* newspaper office on December 1.

The first directory of the town has just been issued from the office of the Lee *Gleaner*, its 175 pages having been compiled by J. B. Ganssett. It is handsomely illustrated with views of eight churches, the Memorial Hall, Baird & Benton's block and the three principal high and graded school buildings. W. H. P.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., November 13, 1894.

A very noticeable improvement is to be recorded in the state of trade. Several of the principal manufacturers of the valley were to-day interviewed by your correspondent, and they all, without exception, said that business was much better than it was even so short a time as one week ago. It is very apparent that manufacturers are feeling differently than of old. There is a new tone to the trade, and there is no mistake about it. "It seems almost too previous to say so," said one manufacturer; "but I really believe that the change in the aspect of affairs is due to the result of the elections. What makes me think so is this, that within the last few days we have had many letters from our trade asking that we make contracts for a certain amount of our paper to be delivered weekly, or for certain lump quantities to be delivered as they may require. I will tell you, somewhat in confidence, that we have not entered into any of these contracts. Our trade is showing such signs of improvement that we are not anxious now to go into anything of this kind. I tell you that the sky has changed, and it has begun to come our way."

Another large manufacturer confirmed the sentiments expressed above and added a chapter. "We have had letters within a day or two," he said, "from large chemical houses in the East with whom we deal, and they tell us that they are just now placing larger contracts with the paper mills than they ever have at any previous time. That means something. Since the election we have taken several large orders which we understand have been held back until it should be known what the result was to be. We, too, have had many inquiries for contracts, such as have not before been offered to us for some little time. I think it is due principally, if not wholly, to the election."

Yet another manufacturer reported that he was already three or four weeks behind on his orders, and if things came in as they had been doing of late he did not know what he should do.

It is most encouraging to your correspondent to be able to report these things. It is really the first good strong ray of light which has fallen across the situation here. There have been little glimmers, such as the one in September last, but they soon faded away, and while the Fox River Valley has at all times been in as good condition as any other paper making community, if not a little better, yet it has been discouraging to see everywhere an absence of the prosperity which was so noticeable up to a year and a half ago.

Your correspondent learns that Promoter Butterworth, of the English syndicate, is at present in New York, and that his object in going there is to meet a committee from England who have come over here to see about going into the scheme. It is stated that Mr. Butterworth and the committee may be expected to arrive in this valley at any time now. It is probable, therefore, although your correspondent has no authority for this statement, that Mr. Butterworth will not need to go to England himself, as he at first expected. It is expected that the next move will be for the committee to examine the mills and look into the statements of the business they have been doing, with a view to finding out whether or not it will be a profitable thing to complete the purchase. In regard to the mill of the Shattuck & Babcock Company, at De Pere, upon which it is acknowledged that no option has been given, it would seem to your correspondent, although this may not be the correct explanation, that this property was especially well calculated to be entirely independent of the syndicate, in case it should become a fact. It is the only mill in this part of the West which makes loft dried papers, and there would consequently be no competition with the syndicate. It seems possible that the people at the helm in this company did not wish to go out of the business, and kept this plant somewhat as "an anchor to windward." The property is very valuable, is making a very excellent grade of paper and has a fine trade, so that there is no possible reason for its not being wanted by the syndicate, in case it could be obtained.

The Winnebago Paper Mills Company, of Neenah, is waiting for an opportunity to make some improvements at its plant, but business is at present so brisk that it does not know when this time will come. In order to help out its product it will increase the drying capacity of its machines by making them double deckers. It will add four 42 inch dryers to one machine and six 36 inch dryers to the other. The dryers are already on the ground, but the machines cannot be stopped for the present to put them on.

David Davis, of the Winnebago Paper Mills, is also interested in the new Dells Paper Company, whose mill at Eau Claire has just gone into operation. In order to assume the management of this new enterprise, Mr. Davis has left Neenah and taken up his residence in Eau Claire. Mrs. Davis of course goes with him. They have rented a house there for the winter, and have not yet removed all their things from Neenah, but it is probable that they will be located there permanently hereafter. The pulp department at Eau Claire has been started, as reported in these columns, and the paper mill, or at least one machine of it, is expected to go into operation at the end of this week.

The Kimberly & Clark Company has just ordered of E. P. Allis & Co., of Milwaukee, a 150 horse power compound condensing steam engine, which is to be delivered about the 20th of next month. The engine will be placed in the mill of this company at Kimberly, and used to run the two large paper machines in the print department. It will go in the basement of the mill, close to the new boiler house from which the steam will be derived, and will make the company independent of the stage of water that may be present in the river.

The fall rains have raised the water in the river somewhat, but there is still too little for the best interests of manufacturing. The ground here is covered with snow and has been since election night, and there is a genuinely wintry feeling in the air, as though the cold season had come to stay.

Albert Gilbert, of Menasha, is at present enjoying a vacation at Port Gibson, Miss.,

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and will be there for several weeks to come. Mrs. Gilbert is the guest of her parents there, and will not return to the North until next spring.

John A. Kimberly, Jr., of Neenah, is absent from home on a business and pleasure trip to the East.

Walter Furguson, representing the Appleton Woolen Mills, has just departed for the East to interview manufacturers there in the interest of the Appleton felts.

W. Lesser, of Albany, N. Y., is in the valley on business. He says that he notices a considerable revival of business in the paper trade wherever he has been for the past week.

W. H. Bucher, of Cincinnati, was in town last week congratulating the people here upon the result of their efforts in the recent election, and also of course supplying the wants of his trade. FOX RIVER.

MIAMI VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, November 15, 1894.

Trade continues with a substantial regularity, and the change since last week, either with a backward or forward tendency, has been unappreciable. In all branches there appears to be an encouraging outlook for a winter season of continued prosperity. Without a doubt conditions are less aggravated now than for a long time. The situation has eased considerably, and the paper trade in general notices the improvement. Outside of this metamorphosis, which has been gradual and general, there is little to report as to conditions.

With nearly all mills running the Miami Valley is unqualifiedly a busy manufacturing centre.

The Weston Paper Company's new reservoir, at Greenfield, Ind., has about been completed. It is 250 feet in diameter, and is in reality an artificial lake of considerable size, designed for deposits of waste, which many people contend contaminate the running waters of creeks and rivers. Mr. Weston said that he did not desire to engage in a possibly long and tedious litigation, and it was a matter of doubt whether farmers in the neighborhood would rise in protestation or not. He thought that the simplest and easiest way out of a prospective complexity would be to construct an artificial reservoir which will receive the straw and lime waste from Greenfield's immense mills. The ground will rapidly absorb the liquid contamination—if it really can be so considered—and the lake will not give forth a foul or impure stench, as a fresh supply of water has already been provided for.

With the resumption of the Kenton and Tiffin Mills of the American Straw Board Company, in Ohio, all of the plants belonging to the "trust" are in operation. In Dayton a substantial lot of orders is on the books, and the mills with an increased force, by reason of the addition of a machine room and other machinery, are running part of the night. The New Portage Mill, which has been idle longer than a year, is now in progress also, and there seems to be no end to prosperity in the great Buckeye State, where the American Straw Board Company controls a number of plants. Charles Whealen, district manager, makes frequent trips over the State visiting the various mills and supervising details. At Cincinnati the State agency is located and is conducted by Chas. W. Bell, an old Daytonian—old in experience and business associations, but young in years and energy—who was for years connected with the Dayton Paper Novelty Company. The city in general enjoys his success, for it was he who sat as an unalterable judge, as president of the Dayton City Council, in all matters appertaining to municipal improvements. While it is true that many of the greater and more important improvements have taken place since his retirement, the foundation was laid during Mr. Bell's incumbency.

While prices in strawboard have not reached the top notch, they are gradually arising from the ruins. There will be no phœnix-like apparition for a long time, either.

In referring to the resumption of the Kenton, Tiffin and New Portage mills, it should be stated that their suspension was the result of low water. Since arrangements have been perfected for a bountiful supply of water, a continuation, in view also of the increase in business, is assured.

While no real complications in the ship canal project have arisen, the conditions this week show conclusively the necessity of quick action on the part of the Miami Valley enthusiasts. A heavy pressure has been brought to bear by the alert and perspicacious Pittsburgers, who appreciate the immensity of the undertaking and the manifold benefits to be derived after a consummation of plans. It now depends upon Dayton, Cincinnati, Toledo, Hamilton, Middletown, Troy, Piqua, Lima, Defiance, and other cities and towns along the proposed line, to extend an effort which will have its effect.

Pittsburg has built public works in anticipation of such a canal, entailing an expenditure of $115,000, which includes the sum of $40,000 spent in the improvement of the harbor and $75,000 outlay in connection with the movable dam at the mouth of the Beaver River. The sum of $50,000 for an independent survey of a route across Western Ohio is deemed a necessity. The larger cities of course are expected to contribute the bulk of this amount, and it is thought that when the situation is thoroughly understood no difficulty will be encountered in securing it. The point, however, and a most pungent and suggestive one, is to convince the manufacturers and leading business men of the necessity of hurried action.

There seems to be no little dissatisfaction with the proposed size of the canal, and if an extension of time for the survey can be secured it will aid the Ohio projectors materially in their cause, thus giving more time to the collection of the desired $50,000. Engineers of this State, who have the welfare of the community at large at heart, are convinced that data and statistics of the proposed Toledo-Cincinnati route will show more favorably and to a greater advantage than facts, figures or calculations from any other known section.

Said a paper manufacturer, with reference to Toledo's attitude in the matter: "An effort will be made to show Toledo that she must enter the scheme with her additional influence, or be very naturally opposed in her fostering of the Michigan Canal. The building of the canal to Cincinnati would make Toledo one of the greatest ports in the world, and would bring Cincinnati and Dayton in direct communication by water with Chicago. The existence of the canal would obviate the possibility of taking from Toledo this position by some other port. These facts will be presented to Toledo, and her entire co-operation will ultimately be secured, I think. With this and the united influence of the commercial and financial interests of Western Ohio, I consider that the Miami Valleyites interested will climb successfully over all contending obstacles."

A recent article in the *Scientific American* on the proposed ship canal is misleading. The improvement first secured its start in this city, Capt. William Morris sounding the incipient tocsin and completing a survey.

The Cincinnati, Hamilton and Dayton Railroad Company has brought suit against Charles F. Gunckel, E. W. Gunckel, J. M. Johnson and P. J. Sorg, all interested in the paper industry, for $1,252.94, an amount claimed in a certain transaction.

J. Boni Hemsteger, proprietor of an extensive show printing establishment at Piqua, has placed his plant in the hands of receivers, who will continue the management. The business embarrassment, it is thought, will be only temporary.

The Dayton *Journal*, up to ten months ago edited by a writer of national prominence, Maj. W. D. Bickham, has made rapid strides in improvement, only this week adding a new web perfecting press. W. D. Bickham's sons have been successful in their management and have effected many changes for the better.

A postponement of the assignee's sale of the Friend & Forgy Paper Mill at Franklin, by Attorney Rue, has been made and the first offer to the public is advertised for December 8, instead of November 17.

The paper trade will still greet their Middletown associate as "Congressman Sorg," that gentleman of the historic old Third District having only one companion of his political belief in the State, the Congressman from the neighboring Fourth District. This will prove a distinction in its way, but will evidence the determined and closely contested fight necessary to win the day and the close margins in the ballot battle. Mr. Sorg's plurality was a trifle over 200, but as good as 20,000, as far as figures are concerned.

Hugh R. Bethen, of the Scranton Supply Company, Scranton, Pa.; S. Holt, of the Boston Belting Company, and "Colonel" Berry, of Carter, Rice & Co., circulated in the trade this week.

Col. Henry Mead visited Indianapolis, while Ed. B. Weston was hustling in New York, Boston and Philadelphia all week.

M. V.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., November 15, 1894.

With two weeks of November behind us to serve as a criterion, it looks as if the present month will show quite an improvement over the months recently gone by. Business moves along, some weeks brisk, others quiet, but averaging fairly well. The mills are all running on full time now, and everybody seems to be busy, but orders are not accumulating very rapidly.

There is a moderate call for fine writings, and something is doing in the cheaper makes. Book papers find customers to a certain extent, but any of the mills could handle more orders very comfortably. The coarser grades are moving quietly, with orders enough ahead for present needs. Prices have not changed any of late, and very little is said in regard to an increase. There is too much competition just now for a movement of that kind.

There is little to say as regards the stock market. There is very little demand even for choice lots, and both foreign and domestics are controlled by this condition. Prices are steady and little change is looked for as long as the present situation rules.

Chemicals are moving fairly well and the dealers say that there is more doing now in their line than there was a month ago, which is a good omen.

The air is full of politics again, and very little else is talked of on the streets and public places. The city is having one of the hottest municipal campaigns in its history, and one would think that the Presidential campaign was in full feather, judging from the nightly rallies and street parades. The liveliest kind of a fight for the mayoralty is on.

I stated in last week's JOURNAL that young Mr. Whiting, treasurer of the Whiting Paper Company, was likely to be a candidate for mayor. Since then he has announced that, after giving the matter careful consideration, he has decided that he could not, if elected, spare the time from his business to devote to the city's interest, and Mr. Whiting is not a man to undertake a thing which he cannot honestly carry out.

The Hampshire and Carew Paper companies, South Hadley Falls, have set the pace for other manufacturers in this vicinity, and the result will be watched with interest. The employees of these companies were notified this week that an immediate increase of 5 per cent. will be made in their wages and that another similar addition will follow on January 1. This will restore the wages to the figures paid prior to June 1, when the business depression made a reduction necessary.

Skinner & Ryan, publishers of the *Free Press*, were again before the police court on Saturday on the charge of libel, and this time they were held for the grand jury, the bonds remaining as before, $3,000 each. The case will be tried at the December term of the Superior Court. Meanwhile the newspaper is being issued as if nothing had happened and it is as saucy as ever. The publishers seem to have no fears of the result.

The Holyoke Water Power Company, which controls the gas business of this city, has just announced its second reduction in the price of gas within two years. The price is now reduced from $2 to $1.50 a thousand feet, with a discount of 10 per cent. for the prompt settlement of bills. The discount virtually makes the price $1.35 per 1,000 feet. Manufacturers and large consumers are allowed a more generous reduction than householders and others.

It is understood that the Riverside Paper Company, which recently built a fine new mill beside its present plant, has under consideration the matter of improving the old mill to the extent of $40,000. This sum will be devoted largely to the introduction of new machinery, and will increase the producing power of the mill to quite an extent, as well as necessitate the increase of the working force.

The wedding of Abbie Sturtevant, a relative of Fred H. Sturtevant, of the Massasoit Paper Company, and J. B. Sawyer, of Dover, N. H., took place in the parlors of the Massasoit House this week.

We are enjoying the sunshine to-day for the first time this week. The weather for the first three days of the week was composed of rain, snow and fog, a very unhappy combination. H.

WESTERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

NIAGARA FALLS, N. Y., November 16, 1894.

The old question of a big export duty on pulp wood on the part of the Canadian Government is again revived by the reading of an interesting paper on "Pulp and Pulp Making" by Civil Engineer J. H. Lefebvre before the Chambre de Commerce at Montreal last week. Mr. Lefebvre showed the necessities of the industry, the consideration of water powers and sites, the advantageous situation of Canada for such an industry, its opportunities and the price and cost of production. Many of the facts presented by the gentleman are old.

Mr. Lefebvre advocates the re-imposition of the differential rate of duties levied on spruce logs.

The Chambre de Commerce took into consideration some of Mr. Lefebvre's suggestions. Mr. Lalonde introduced a resolution, which was seconded by Mr. Boivin, requesting the Quebec Legislature to put higher stumpage fees on pulp wood for export, and also requesting the Dominion Government to put an export duty on pulp wood. The resolution was passed unanimously, and this action of Montreal's Chambre de Commerce is to be followed by similar action in other cities and a personal agitation with the Dominion Government. The Quebec Provincial Government has imposed a stumpage duty of 15 cents per cord on all pulp wood exported, but that is merely a drop in the bucket and quite useless as a means of protection to the pulp manufacturers of that province.

A second carload of pulp from the Laurentide Company has been seized and held at Detroit by the collector of that port. In the first instance the collector insisted on a valuation of $15 per 2,240 pounds. Now he has raised this valuation 12½ per cent. and besides claims a penal duty. The Laurentide people intend to fight this case as well as the other. They have been paying at the $15 rate since their first seizure under protest until they can secure an opinion from the Board of General Appraisers. The company has entered its pulp at Richford and Rouse's Point at $12 per 2,000 pounds, and at the Suspension Bridge it has been entered all along at $12.45 per 2,000 pounds. W. E. T.

NORTHERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., November 16, 1894.

The sensation of the week here is the fact that the St. Lawrence Paper Company, of Dexter, has gone into the hands of a receiver. The news has caused excitement and is the talk of the town.

A few facts pertaining to the company may prove interesting. The capital stock is $60,000, all of which has been paid in. There are 600 shares of $100 each. The debts of the company aggregate $75,448.67, inclusive of bonded indebtedness. Six different suits

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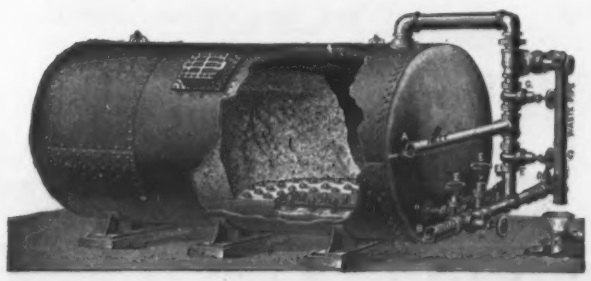

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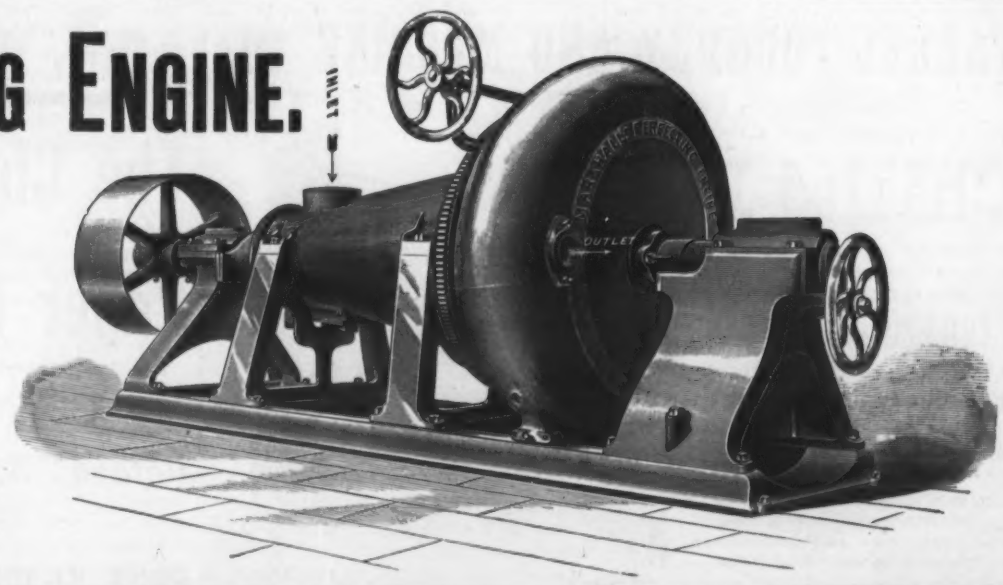

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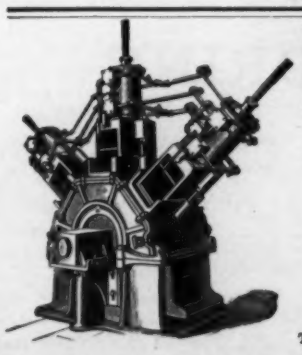

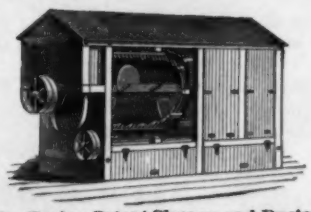

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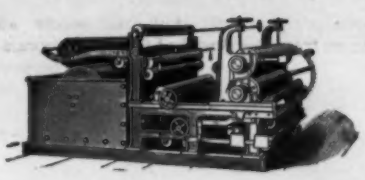

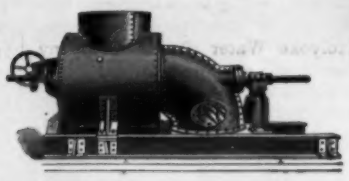

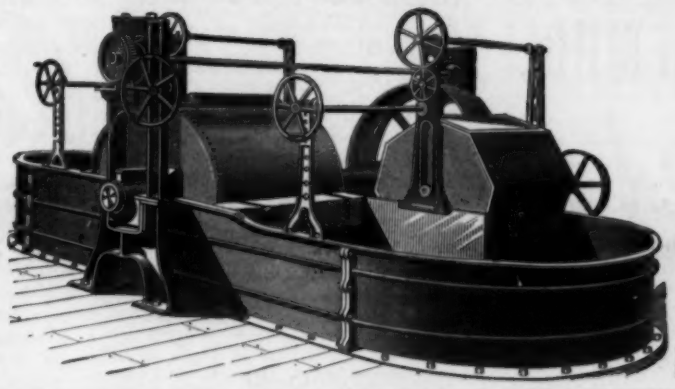

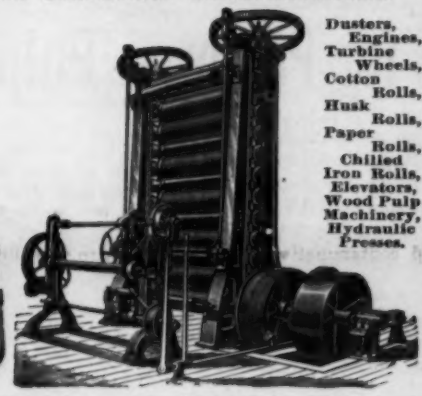

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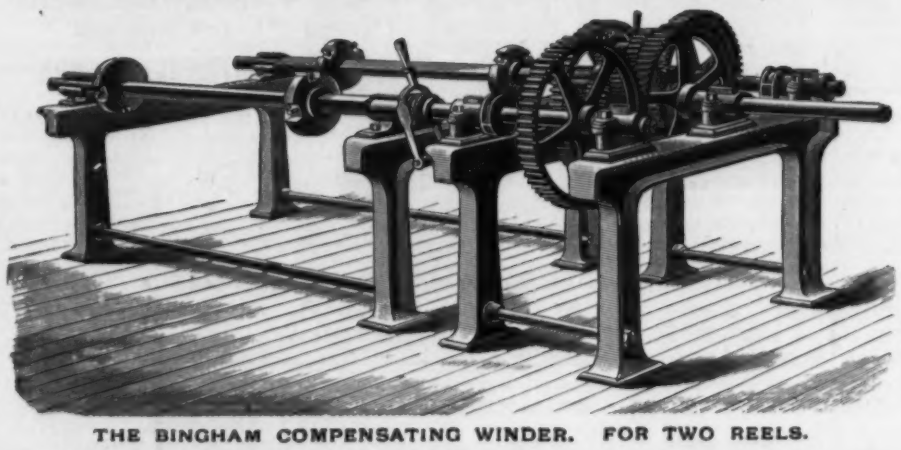

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That every ***New England Pulp Grinder*** ever made or sold in this country has been designed, built, and first sold by me; and I am sole owner of the right to use the name "New England" as applied to a pulp grinder, as the United States Patent Office records will show, and no other person is or has ever been interested with me in the manufacture of Pulp Machinery.

All the rights and interest of the Scott & Roberts Company and the New England Pulp Machine Company which were organized for the purpose of selling my pulp machinery were acquired by me more than four years ago, since which time many changes and improvements have been made in the New England Pulp Grinder.

I am prepared to furnish at short notice everything required for making ground wood pulp, including plans and specifications, and estimates for which I will furnish same; and erect the whole, if required, ***guaranteeing a greater production of pulp,*** with a given power and at a less cost for manufacture, than can be done by any other machines; and no pay asked until machines perform as stipulated.

Can furnish any of the leading ***Turbine Water Wheels,*** fifteen styles ***Pulp Grinders, Noiseless Screens, Wet Presses, Sawing Machines, Barkers, Splitters, Pumps, Shafting, Mortise Gears, Pulleys, &c.***

Remember you can have a ***guaranty*** of the ***cost*** of ***your mill;*** also of the ***cost per ton to manufacture the pulp.*** Liberal terms.

I have on hand ***six Pulp Grinders,*** three pocket, to grind wood 17 inches long; and ***eight Grinders,*** heavy pattern, to grind wood 24 inches long; also ***Barkers*** and ***Splitters.***

Many of the old style New England grinders can be rebuilt so as to greatly improve them.

More than **FOUR HUNDRED** ***New England Grinders*** in use.

Don't use an old superannuated machine, nor an inferior imitation, when you can buy a genuine, good Grinder at the low prices at which they are now offered.

I have on hand for prompt delivery six heavy Pulp Grinders, lately made to order, three pockets, to carry Grindstone 18 inches thick, 50 inches diameter; also eight Grinders, heavy pattern, three pocket, to carry stone 25 1-2 inches thick and 52 inches diameter. These will be sold at reduced prices and on extra favorable terms, fully guaranteed in every particular. Also on hand Barkers and Splitters.

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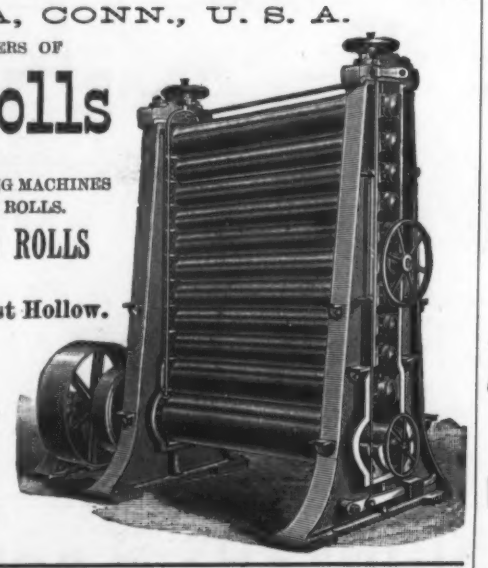

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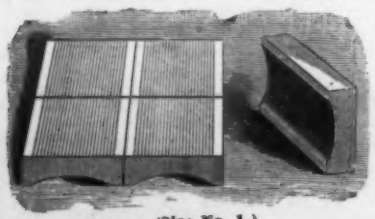

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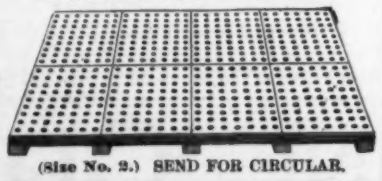

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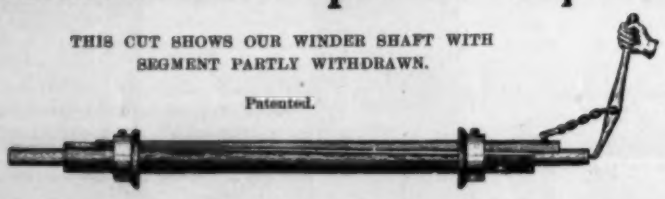

THIS Shaft is designed for making rolls for plugging. Being perfectly round, it gives a roll practically true from the very centre to outside and a true centre for plugging, and a much more solid roll than with other shafts; it may be used on a drum winder, if desired. When segment is withdrawn, which requires but little strain, the pressure is sufficiently reduced to allow easy removal of shaft.

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PART II.

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CHAPTER II.—**Fibres.** Cellulose in its relations to the plant; the vegetable cell; the cell wall; changes which occur in the cell wall; lignin or incrusting matter; its chemical properties; characteristic markings of the cell wall in different fibres; characteristic cells other than fibres in different pulps. Classification of fibres: 1. Seed hairs; cotton, chemical and physical character of fibre, dimensions, analyses. 2. Bast fibres, as linen, jute, hemp, manilla, rhea, ramie, agave, sisal, adansonia, &c.; occurrence in plant, separation of filaments; character, size, distinguishing features of filaments and ultimate fibres, analyses and chemical properties. 3. Fibres and other cells from whole stems and leaves, as straw, esparto, bamboo; measurements and characteristics of fibres, yields, analyses; characteristic cells found with fibres. 4. Wood fibres: growth of wood; cambium layer; spring and autumn wood; sap and heart wood; resins; bark and knots; analyses of woods; specific gravities; ash; fuel values; occurrence and character of all woods used for pulp making.

CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, drainers; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Rosin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of alumina; moss; casein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

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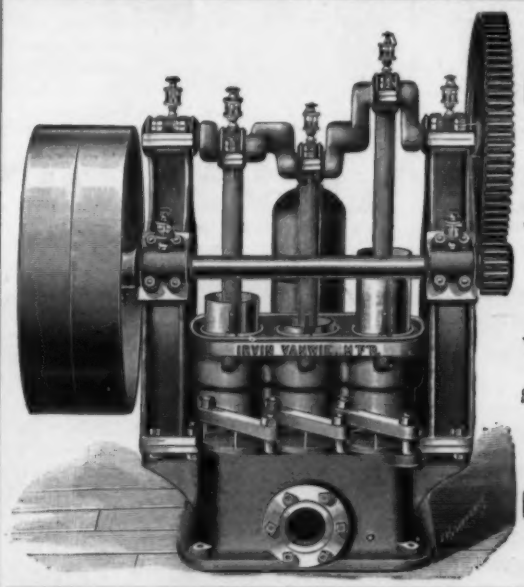

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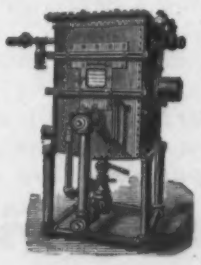

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Camden, N. J.

No. 8, New York—136 Liberty Street. Chicago—Monadnock Building.

have recently been brought against the corporation, viz., by the Dexter Sulphite Pulp and Paper Company for $4,579.62, by E. F. Birmingham for $3,129,95, by Ashton C. Clarkson and William F. Ford for $109.75, by the Burgess Sulphite Paper Company for $340.81, and by the High Falls Sulphite and Mining Company for $713.85.

The incumbrances on the company's property are set forth as follows: One trust mortgage of $25,000, made by the company to G. H. Sherman and S. B. Upham as trustees; another trust mortgage of $50,000, to H. D. Goodale and A. L. Upham, $25,000 of which was to provide for the payment of the first trust mortgage. The real estate consists of 6 acres of land and covers the easterly half of Fish Island, with two small houses.

This week Walter Galloway, an employee of the Dexter Sulphite Pulp and Paper Company, of Dexter, met with serious injuries from having his hand caught in the machinery. He was working on the new cable carrier recently erected by the company, when he stooped down to pick up a piece of bark which lay near the sprocket wheel. He accidentally slipped and his right hand was caught between the wheel and the cable wire and terribly mangled. Milton Doane, a fellow workman, saw the accident, and ran to his comrade's relief just in time to save him from a fall of 50 feet to the frozen ground below, which would have undoubtedly killed him.

W. E. T.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, November 15, 1894.

Reports from those identified with the paper business are certainly cheerful. The volume of business seems to be increasing from week to week, although the movement in paper so far this fall has not been up to the average call of past seasons, but it is much better than last fall. Trade last year was, as everyone knows, very limited in volume, and the comparisons now being made are based upon the business at that time. If general trade conditions continue to show the same improvement during the months to come as have been noted since the fall season began, it is quite likely that the paper business will reach its old time proportions. Then possibly prices may range themselves on a higher basis and thus indeed be more satisfactory to all engaged in the business.

A little improvement is reported in the paper stock market in the line of inquiry. Buyers are more generally inclined to place orders than for some months past, but they want concessions in prices which importers cannot meet for the reason that ocean freights have recently advanced, and the foreign markets are not inclined to accept buyers' offers. Some business is being done, however, even now on importers' terms, as the stock is badly wanted, and domestic rags are getting very limited in spot supply.

Returning again to the subject of paper, F. A. Smith & Co., the John street paper jobbers, report the sale of a car load lot of straw wrapping, which is mentioned for the reason of its rarity in these days of manilla paper, which has almost driven straw paper out of the market.

The Hollingsworth & Whitney Company, of this city, is making in its different New England mills about 70 tons of manilla paper a day, and this product, it is said, is moved entirely by correspondence, as the company has no regular traveling men on the road. The average daily mail received at the company's Federal street office is close on to 200 letters, and a special room is fitted up solely to take care of this correspondence and in which all letters are filed.

Since the removal of the Hollingsworth & Vose Company from the second floor of the Hollingsworth & Whitney Company's building, the latter firm has taken the vacated floor and has fitted up a portion of it for offices for the officers of the company, using the remainder for paper. This change leaves a little more room in the store for office quarters, which was much needed.

J. W. Flint, of Bellows Falls, Vt., with his family, has been quartered at the Vendôme for a few days this week.

Freemont W. Spicer, general manager of the Frontenac Paper Company, of Dexter, N. Y., spent yesterday in town to the delight of his many Boston friends, who were much pleased to meet him.

Geo. A. Bagley, of the Bagley & Sewall Company, Watertown, N. Y., with his draughtsman, John Knights, passed through the city yesterday en route to Maine.

Other trade visitors reported were: C. H. Milliken, of Mechanic Falls, Me.; F. C. Whitehouse, of Brunswick, Me.; Oscar Hartwell, of Nashua, N. H.; J. T. Emerson, of Claremont, N. H.; Chas. S. Mayo, of Lawrence, Mass.; John D. Carson, of Dalton, Mass.; Mr. Williams, Chas. S. Barton and G. B. Witter, of Worcester, Mass.; C. W. Ramage, of Monroe Bridge, Mass.; Mr. Judd, of Holyoke, Mass.; E. B. Weston, of Dayton, Ohio; Col. C. B. Wing, of Cincinnati, Ohio; Mr. Southworth, of South Hadley, Mass.; Mr. Raybold, of Mittineaque, Mass., and S. Goldman, of New York.

Charles A. Dean, vice-president and selling agent of the Hollingsworth & Whitney Company, will spend the winter with his family in Florida, as has been his custom for some years past, and will leave town en route for the South early in December.

Mr. Dean is an inveterate tarpon fisher, and big souvenirs of his luck in Florida waters hang on the walls of his office. Heretofore his excursions after tarpon have not been under the home-like conditions which he will enjoy this winter, for he has had a house boat built for his use this year.

The boat was built at Morris Heights, N. Y., and was finished a few days ago; it will soon start for Florida under its own power, which consists of two six horse power engines of the naphtha type.

It is something new in house boats, for it is built for cruising, too. It is 44 feet long and 13 feet wide, and draws only 2 feet of water. The speed is about 7½ miles an hour. The hull is of oak and cedar, the bottom is coppered, and the upper works are finished in mahogany. The windows have movable blinds, wire screens and plate glass. The saloon is fitted with two couch beds. A toilet room is thoroughly modern. The galley is fitted with refrigerator and coal stove for hot water tanks. The cooking utensils and tableware are nearly all aluminum. The engine room is fitted for sleeping room for the crew of 3. On the after deck a large ice box will hold 400 pounds. There is forward a comfortable deck covered by an awning.

Mr. Dean is building a boathouse at Punta Gorda, Fla., where he expects to make his headquarters and store the craft in the summer.

The boat will be run to West Palm Beach by the men, and then the owner will join them and cruise around the coast of Florida to Punta Gorda. The boat has very little outside work going down, running by canal and river.

Mr. Dean is his own pilot when aboard, but all of his men are seamen, and also understand the engines. Steamboats require licensed pilots and engineers, and fresh water is scarce, so the advantage is with the naphtha craft. Sailing is difficult in the shallow bays and rivers on account of the very crooked waterways. To enjoy cruising in Florida it is important that one should cruise up these narrow channels and rivers, and many of these rivers are for miles tide water.

DELESDERNIER.

Soldering Without Heat.

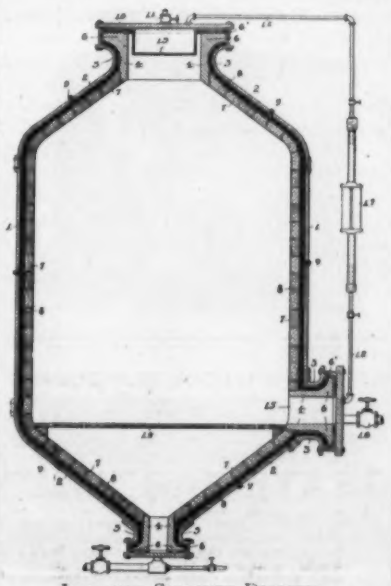
Soldering without heat, commonly called cold soldering, is a process not only possible but common, and after the first preparation is exceedingly simple. The process given has many uses for soldering all articles which cannot be exposed to heat and for soldering parts together which cannot be got at with either a copper bit or a blow-pipe flame. The process of cold soldering can be extended even to soldering two faces of dirty cast iron together. It may be done on blocks of any size without the slightest assistance, so far as heating is concerned, by the following process: Although the the first preparation is tedious a large quantity of the materials can be made at once, and the actual soldering process is simple and quick. Flux—One part metallic sodium to 50 or 60 parts mercury. This must be kept in a stoppered bottle, closed from the air. It has the property of amalgamating (equivalent to tinning by heat) any metallic surface, cast iron included. Metallic sodium alloys with mercury by cautiously triturating the materials in small quantities at a time in the Wedgewood mortar. If it be too much trouble to make it, the sodium amalgam can be bought ready made from any chemist or dealer in reagents.

Solder—Make a weak solution of sulphate of copper (about 10 ounces to 1 quart of water). Precipitate the copper by rods of zinc; wash the precipate two or three times with hot water; drain the water off, and add for every 3 ounces of precipitate 6 ounces or 7 ounces of mercury; add also a little sulphuric acid to assist the combination of the two metals. The finely divided copper combines with the mercury, and they form a paste, which sets intensely hard in a few hours; and while soft this paste should be made into small pellets, which harden, and has the property of softening by heat and again hardening in a few hours. When wanted for use heat one or more of the pellets until the mercury oozes out from the surface in small beads, shake or wipe these off, and rub the pellet into a soft paste in a small mortar, or by any other convenient means, until it is as smooth and soft as painters' white lead. This, when put on the surface amalgamated by the sodium and mercury, adheres firmly and sets perfectly hard in about three hours. The joint can be parted, if necessary, either by a hammer and cold chisel or by heat about sufficient to melt plumbers' solder.—*Manufacturer and Builder.*

Improved Digester.

An illustration is given of an improved digester for use in the bisulphite process of reducing wood, its feature being a tile lining with a molded cement backing, designed to be capable of withstanding the chemical and mechanical action of hot acids for a longer period than heretofore, and having a minimum number of openings and provided with advantageous adjuncts.

1 denotes a riveted cylindrical iron shell, and 2 2 the top and bottom dome shaped ends, which may be either conical or hemispherical, as preferred. Each of these ends is preferably made of one piece welded and formed into shape without the usual rivets. To these are attached the bell shaped necks 3, each preferably welded to the dome 2, or they may be secured by rivets in any suitable manner; but in all cases the neck should be made of one piece by suitably welding and forming the same. The object of the bell shaped or enlarged neck 3 is to provide for interior necks or acid resisting linings 4, composed of vitrified pottery, or of cement composition being placed inside thereof. The bell shape affords a bed against which the lining will solidly rest, thus preventing



IMPROVED SULPHITE DIGESTER.

movement of the inner lining, when a cover, 10, is bolted on. This form also allows of a larger body of material at the angle 6 of the neck lining, where the greatest strain from the pressure of the cover occurs. This is of importance in connection with the use of frangible material such as described, and to further protect and hold the neck lining a hoop or ring, 6', is provided.

Without this hoop the lateral outwardly extended flange of the inner neck is liable to be broken when the cover is bolted on. In case the lining is broken the hoop prevents the broken pieces from being blown out by internal pressure, thereby obviating the loss of the "cook." The composition of which this neck is sometimes formed when in a plastic state can be molded against the hoop or ring.

Commencing at the bottom, the vitrified neck 4, being less in diameter than the interior of the iron neck 3, is placed in position, leaving a space of about half an inch between it and the iron. A composition of acid resisting cement is then poured into the space and allowed to set, thus combining the neck and cement and holding the inner neck solidly to the iron. The vitrified or composition necks are preferably made of one piece, but they may be made of two or more parts and fitted to one place. Tiles 7, either vetrified and unglazed, or made of a cement composition and thoroughly dried, are fitted to the neck 4, and one course or tier is laid in acid resisting cement in such manner as to leave a narrow or thin space, preferably of about an inch, between the tile and the iron shell, forming a mold into which is poured a thin fluid composition of acid resisting cement, 8. The laying of the tiles and pouring in of the cement is continued in this manner until the digester is entirely lined with combined tiles or blocks of cement and molded cement.

A composition of hydraulic cement, asbestos, sulphate of baryta and silicate of soda is suitable for a neck or a lining, and a neck or tile made of an acid resisting composition of such character and having no glaze is the equivalent of a vitrified neck or tile in this construction. The use of an alkaline silicate in the composition is recommended, as it increases the acid resisting power of the cement when combined with other ingredients thereof. The semi-fluid cement being poured between the shell and the tile, previously cemented together, fills every superficial opening in the tile and between their inner edges and sets before its moisture is too much absorbed, and is united with the tile in a very intimate and solid manner.

To obviate the breaking of the cement, the following described device is employed: Molded cement has a tendency to draw or contract toward and from one or two points, or from a few points while setting, thus causing a movement of a large body of the cement in two or more directions and producing cracks. Slight movement of sections not more than one or two feet across do not cause cracking. There are, therefore, preferably inserted into the iron shell at short intervals anchor bolts, as at 9. These bolts being bedded into the molded cement hold it in place and effectually prevent the cracking. They can be provided with a groove or a hole through their centre, thus making a vent by which a leak can be located. The tile may also be scored on the side next the cement to assist in uniting and holding the cement.

In the drawing 10 is the cover or manhole plate of the top of the digester, preferably made of bronze, but it may be made of iron and coated with lead. To this cover is attached the gas escape valve 11, and also the steam end of the water gauge pipe 12. To protect these from chips which pass into them when the digester is in use, a basket of perforated bronze or lead, 13, is attached to the cover 10. By attaching the basket to the cover the trouble occasioned by the commonly used lead sheet laid loosely on a ring or shelf in the neck of the digester, and which rises up and allows chips to pass out around it, is avoided. The basket has a transverse diameter less than that of the neck so that fluids may pass between the basket and neck, whereby they have a more extensive and freer outlet. This construction also avoids the use of a packing between the basket and cover.

It has been usual to discharge the cooked pulp by blowing off through a valve at the bottom, or at the side near the bottom of the digester. In the process of cooking a sediment of lime is precipitated to the lower part of the digester and becomes mixed with the chips, preventing the thorough cooking of all chips so mixed with lime. In blowing off at the bottom, this and the uncooked wood pass out with the rest and damage the entire charge. To obviate this there is a perforated bottom 14 at about the top of the bottom cone, through which bottom the lime passes into the space below not occupied by chips.

On a level with the top of this perforated bottom in the side of the digester is an opening or door, 15. In the cover of this opening is a blow off valve, 16, and the water end of the water gage pipe. The opening heretofore occupied by the blow off valve corresponds in size and function to such pipe opening in the cover in the present construction, and such opening is entirely inoperative for the purposes of this improvement, which requires one of such size and location that a stream of water can be thrown through it by a hose or otherwise without materially interfering with the outflow of such water mingled with the solid material dislodged thereby. The cover of the opening is made readily removable, and it is only brought into use after the ordinary blow off pipe has done its work in the removal of the fluid or semi-fluid contents of the digester. The quantity of acid varies with different kinds of wood. To assist in ascertaining when the desired quantity is admitted to the digester, there is a water gauge, 17, which to suit different cases is made adjustable in length by telescoping the pipes that form it. Such construction is shown in the drawing, the ends of the inner pipes being indicated by dotted lines. The joints between the inner and outer pipes are packed water tight in any usual manner. The opposite ends of the inner pipes are extended to and joined with the covers as shown. They may be detachably connected to the covers or may have detachable joints of usual character in the pipes themselves at points near the covers.

The bottom of the digester is provided with an opening and a cover for the same, to which is attached a wash out valve and a steam valve. In discharging the contents of the digester the valve is opened to blow out all that will pass. The cover is then removed and a stream of water is introduced to wash out any remaining wood. This can be easily and thoroughly effected, as the opening is practically on a level with the perforated floor or bottom 14. By this method the cooling off of the entire digester is obviated, to the great saving of time and heat. The latter, which remains in the thick lining, has been found to nearly equal the amount required to warm up the succeeding charge. The time heretofore required to cool off the digester so that a man can enter is from two to four hours. By this method the washing out is done from the outside, and consequently this time is saved. By placing a trough at the discharge hole the pulp can be carried directly to the pulp reservoir, thus obviating the labor required to shovel it off from the pit as in the common practice. In addition to the saving of labor and steam, time is saved which can be applied to starting the succeeding operation. In this way it is said that one extra "cook" in four can be obtained by this digester.

Removal of Boiler Scale.

The great bulk of the solid matter deposited from the feed water, remarks the *Locomotive*, may be removed by frequent and judicious blowing. It cannot all be removed in this manner, however, for where the plates are hot more or less of it is sure to bake on, forming the hard, stony layer known as "scale." The commonest components of scale are carbonate of lime (limestone) and sulphate of lime (gypsum). Carbonate of lime seldom forms a stony scale. It may collect in large masses and do serious injury to the boiler, but the deposits which it forms are usually lighter and more porous than the corresponding deposits of the sulphate of lime. Most substances are more soluble in hot water than in cold; but carbonate of lime is a notable exception to this rule, for, although it is somewhat soluble in cold water, in boiling water it is almost absolutely insoluble.

It follows from this fact that when feed water is pumped into a boiler the carbonate of lime it contains is precipitated in the form of small particles as soon as the temperature of the water reaches the neighborhood of 212°. These particles are whirled about for a considerable time in the general circulation, and if the circulation is good they do not usually settle until the draught of steam is stopped for some reason, as, for instance, in shutting down at night or in banking the fires for the noon hour. The best time to remove this sediment by blowing is, therefore, just before starting up at 1 o'clock, or after the boiler has stood idle for an hour or so at night, or just before beginning work in the morning; for at these times the carbonate deposit has settled into a kind of mud at the bottom of the boiler.

Sulphate of lime differs from the carbonate in being more soluble in hot water than in cold; and it is therefore not deposited in the same way. The sulphate deposit is formed at those points where the evaporation (and consequent concentration of the solution) is most rapid—that is, in contact with the shell, the tubes and the back head. Being deposited practically in contact with the iron, it forms a hard adherent coating, which often resembles natural stone so closely that nobody but a skilled mineralogist could tell the difference between them. The best way to treat water containing sulphate of lime is to convert the sulphate into carbonate, and remove the carbonate thus formed by means of the blow-off, as already described. This can be done without injury to the boiler by use of soda ash, which is a crude carbonate of soda. The chemical action that takes place may be briefly described thus: Carbonate of soda and sulphate of lime act upon each other so as to produce sulphate of soda and carbonate of lime. The sulphate of soda thus produced is what is known as Glauber's salts, and is very soluble in water, and passes away very readily through the blow-off.

An important change is to be noted in engineering practice, namely, that of winding steam pipes over 8 inches in diameter with three-sixteenths inch copper wire, thus nearly doubling the bursting pressure. It is found that, as with the wire-wound gun, wire of square section coiled round the pipe under tension adds enormously to the strength, and the results of some tests have shown that a wired pipe stands just about the pressure it ought to have stood when unwired, had the copper not been injured in the brazing. To obviate the risks of careless brazing and enable the thickness of sheet copper forming the pipe to be reduced to a minimum, at the same time that full advantage of wire winding is secured, an improved system of manufacturing steam pipes has been devised—forming even a closer analogy to the wire gun than the usual system of wire winding—and consists in using copper of the thinnest practicable gauge to form the interior or core of the pipe. The body of the pipe proper is composed of steel wire wound closely around the core, the interstices being filled in solid with copper by electro-deposition.

During a recent visit to the Pennsylvania coal region we learned of an interesting kink in boiler practice. A battery of twelve plain cylinder boilers discharged its gases through two stacks. The engineer in charge, who is a man of more than average intelligence, made some experiments, by putting cups of fire clay containing different metals in the up-take and noting those which melted, and found the temperature of the gases very high. He set up a Climax boiler, rated at something over 300 horse power, discharged the gases of the twelve cylinder boilers through it instead of through the two stacks, and obtained something over 400 horse power from the heat which had been previously going to waste.—*Power.*

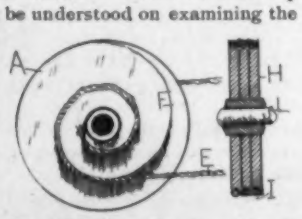
New Inventions—LIX.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Geo. Damon Rice.

Builders of modern spinning mules have long sought a better class of roping to use in driving the various cylinders and parts of the spinning machine. Foreign and other competition have compelled cotton, woolen, silk and textile manufacturers in general to speed their machinery to its highest possible limit in order to increase the product. Among other apparatus to be thus increased in speed are the spinning mules. These are furnished liberally with ropes and bands for giving motion to certain parts. The carriages of the mules, for instance, are drawn inward and outward with ropes which turn on scrolls. Again, a single driving band gives motion to hundreds of rapidly turning spindles by revolving a cylinder at a high speed, which is wearing upon cotton made ropes—so wearing, in fact, that manufacturers have been looking about for a substitute for some years past. It is claimed that banding produced from paper pulp is more durable for this purpose and will be used. Pulp ropes become tough when subjected to friction, and a hard, smooth surface forms, and this is what makes this kind of roping valuable for use where friction is great.

The friction is severe on mule ropes, as may be understood on examining the cut.

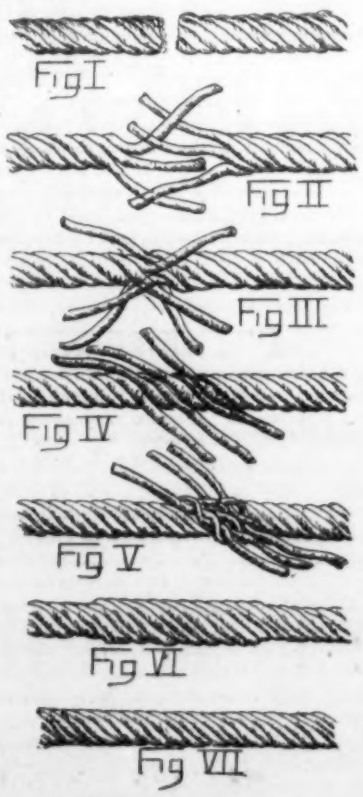


Ropes Used on Spinning Mules.

In this drawing A represents the revolving scroll of a mule frame, and E is the rope. The scroll is continually turning, sometimes one way, sometimes another, in its work of drawing the spindle carriage in, then out, and so the roping is being worn excessively on the metal sides. It is said that cotton ropes wear quicker than the pulp will; again, another long, endless rope of cotton now drives a grooved pulley on the spindle band driving cylinder of the spinning frame, and owing to high speed the band wears quickly. A sectional view of the grooved pulley is shown. L is the shaft, H the pulleys and I the ropes in the grooves. For this use the paper pulp ropes will be good, as they will stand the wear in the grooves.

The pulp ropes are made in two ways. The paper twine process has been found advantageous, in which split sheets of paper are twisted into strands, which are then combined. Applications of varnish, tar and white lead give smoothness and a polish. Well subdued rag and paper stock, in which the fibre is long, is also formed into single strands by forcing the pulp through holes of proper size, then combining these strands thus made by twisting. Tallow, litharge and other strengthening substances are introduced. Ropes made this way are tough, and instead of wearing when run in grooves, simply smooth off and form a hard surface, yet of sufficient elasticity to permit bending without cracking.

The ropes made from pulp are available for rope drives and in turning grooved pulleys of all kinds. The main trouble seems to be in the mode of securing a proper splice. The next cut illustrates a method of making a splice which will do for any kind of rope.



The Art of Splicing Ropes.

Figure I. shows the two ends of the rope to be united. The first work consists in unwinding the strands of each end and arranging them as represented in Fig. II, in which it can be seen that a system is followed in that the strands are arranged alternately, and no two are together. This much done, the strands are drawn together, as indicated in Fig. III. Here it will be noted that a strand is always between two other strands. This brings the butts of the rope together, and next comes the arranging of the strands so that we can see where we are. A good start means that the work is half done. Regularity is the essential point at the start. The plan in Fig. IV. signifies how the union should appear at this stage. The strands are all set uniformly, as may be observed. A little adjusting brings this about. The strands thus prepared, the next move consists in the real work of splicing. Just how this is done can be recognized in Fig. V. Each strand is put around its adjoining one. A strand is taken in the fingers and put around the one next to it. Then the next strand is done the same, and so on with the following. Then begin over again, and keep this up until the entire length of each strand is twisted about its neighbor. When done a splice results very much like that exhibited in Fig. 6. The union is larger than the body of the rope, but this does not matter very much. If, however, it is desirable to have the diameter of the rope no larger at the splice than elsewhere, the strands can be divided and only half twisted in and the other half cut off, and then there will result a splice, the diameter of which will be no larger than the body of the rope, as shown in Fig. VII.

The usual applications of tar, tallow, rosin and common splice dressings on unions thus made will produce a splice which will last as long as the rope.

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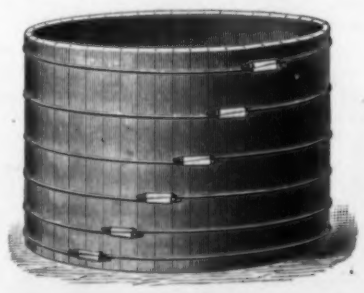

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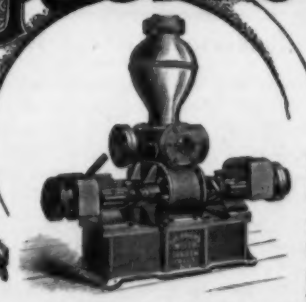

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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED NOVEMBER 9, 1894.

An. Colors..	1,328	$83,529	Paper.....	819	$40,168
Alum.....	388	1,478	Steel Pens...	1	38
Alum's Cake	—	—	Stationery...	9	478
Bl. Powders	615	11,268	Slate Pencils	220	872
Soda Ash...	5,682	18,449	Clay.....	—	1,980
Soda, Caus.	1,052	12,603	J'te B'ts, &c.	—	—
Soda, Sal..	140	304	P. Hangings	2	85
Soda, Hypo.	—	—	P'p'r Stock..	1,709	15,106
Ultramarine	35	905	Terra Alba..	—	—
Books.....	390	40,508	Waste.....	63	11,018
Newspapers.	277	9,963	Wood Pulp..	1,727	13,860
Engravings.	114	19,164			
Ink.....	194	1,618			
Lead Pencils	18	2,674	Totals....	14,691	286,115

Imports General Merchandise for the week ended November 9, 1894.....$5,945,787

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO NOVEMBER 14, 1894.

Whence Imported.	Rags.	Old Papers.	Chemical Fibre.	Ground Wood.	Manilla Stock.
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria...	1,349	....	....	....	....
Almeria.....	....	....	....	....	211
Antwerp.....	1,534	360	831	....	13,884
Aspinwall....	90	....	....	....	....
Bordeaux.....	684	....	....	....	....
Bremen.....	1,685	66	6	....	8,333
Bristol.....	....	....	....	....	4,199
Buenos Ayres.	157	....	...	....	....
Calcutta.....	....	....	....	....	3,003
Cent. America	130	....	....	....	....
Christiania....	....	....	586	....	740
Copenhagen..	700	....	1,536	....	2,238
Dublin.....	....	186	....	....	....
Dundee.....	....	....	....	....	954
Dunedin.....	....	....	....	....	183
Fiume.....	....	....	99	....	....
Geestemunde.	252	....	....	....	1,347
Genoa.....	....	....	...	....	4,594
Glasgow.....	603	118	18	....	523
Gothenburg..	91	....	107	....	....
Hamburg.....	2,177	377	570	....	4,727
Hamilton.....	....	....	....	....	42
Hiogo.....	9,001	....	....	....	....
Hong Kong...	43	....	....	....	....
Hull.....a	8,895	185	1,273	....	16,978
Kobe.....	34,895	....	....	....	....
Leghorn.....	2,384	....	....	....	....
Leith.....	....	159	....	....	138
Liverpool.....	1,383	1,073	....	....	25,397
London.....	5,548	3,357	23	....	13,100
Marseilles....	496	....	....	....	486
Nassau.....	43	....	....	....	15
Newcastle....	....	286	....	....	4,358
Rio.....	26	....	....	....	....
Rotterdam.....	2,855	119	717	....	10,311
Southampton.	....	....	....	....	160
Stettin.....	8,536	45	785	....	9,560
Trieste.....	....	....	49	....	....

a. Including 347 bales cotton waste.

NEW YORK IMPORTS.

FROM NOVEMBER 7 TO NOVEMBER 14, 1894.

Paper Stock.

Atterbury Brothers, State of Nebraska, Glasgow, 17 bs. papers.
L. A. Solomon & Co., Francisco, Hull, 197 bs. bagging.
G. Hamilton, by same, 1 ton chemical fibre.
Castle & Gottheil, by same, 33 tons chemical fibre.
Lewy Brothers, Martello, Hull, 43 bs. bagging.
Perkins, Goodwin & Co., Tauric, Liverpool, 132 bs. bagging.
G. Stratford, Mohawk, London, 76 bs. papers.
Train, Smith & Co., Spain, London, 252 bs. bagging.
James Pirnie, by same, 187 bs. bagging.
G. Rau, by same, 204 bs. rags.
James Pirnie, America, London, 267 bs. bagging.
Train, Smith & Co., by same, 95 bs. bagging.
R. H. Overton & Son, Mobile, London, 58 bs. bagging.
Train, Smith & Co., Martello, London, 286 bs. bagging.
Train, Smith & Co., Polynesia, Stettin, 192 bs. bagging.
Lewy Brothers, Auguste, Stettin, 753 bs. rags.
Perkins, Goodwin & Co., by same, 494 bs. rags.
Lewy Brothers, Johann Fredrich, Stettin, 1,718 bs. rags, 45 bs. papers.

Paper.

E. & H. T. Anthony & Co., Amsterdam, Rotterdam, 6 cs.
H. S. Leclercq & Co., by same, 14 cs.
L. De Jonge & Co., by same, 10 cs.
Dinglestedt & Co., by same, 19 cs.
G. J. Kraft, Spain, London, 12 bs.
Keuffel & Esser, Waesland, Antwerp, 1 cs.
C. G. Soltmann, by same, 3 cs.
Kupfer Brothers, by same, 12 cs.
L. C. Wagner & Co., by same, 14 cs.
G. W. Sheldon & Co., by same, 50 cs.
A. H. Abbott & Co., by same, 17 cs.
W. P. Buchanan, by same, 9 cs.
John Hunter, Francisco, Hull, 10 cs.
E. Kimpton, Campania, Liverpool, 10 cs.
Dennison Manufacturing Company, by same, 72 cs., 5 bs.
J. Dickinson & Co., by same, 2 cs.
Bloomingdale Brothers, by same, 2 cs.
E. & H. T. Anthony & Co., Veendam, Rotterdam, 7 cs.
L. De Jonge & Co., by same, 14 cs.
Kupfer Brothers, by same, 10 cs.
J. C. Drucklieb Company, La Champagne, Havre, 30 cs.
American Tobacco Company, by same, 44 cs.
G. A. & E. Meyer, by same, 8 cs.
May Brothers, by same, 2 cs.
F. Hiller & Son, by same, 3 cs.
John Hunter, Martello, Hull, 14 cs.
Marcus Ward & Co., by same, 20 cs.
Hornborg & Co., by same, 39 cs.
A. V. Benoit & Co., Mobile, London, 3 cs.
Schall & Co., by same, 3 cs.

BOSTON IMPORTS.

FROM NOVEMBER 8 TO NOVEMBER 14, 1894, INCLUSIVE.

Paper, &c.

C. Fenton, Gardenia, Hamburg, 1 cs. printed music.
A. P. Schmidt, by same, 16 cs. printed music, 4 cs. catalogues.
Peter Wright & Co., by same, 24 cs. papers.
Wm. Guild & Co., Michigan, Liverpool, 5 bs. periodicals.
Carter, Rice & Co., Georgian, Liverpool, 26 rolls paper.
J. Dickinson & Co., by same, 7 cs. papers.

Paper Stock.

C. A. Cheney, Georgian, Liverpool, 37 bs. manillas.
M. A. Ring & Son, Nessmore, London, 50 bs. manillas.
C. A. Cheney, Michigan, Liverpool, 510 bs. rags.
Horace Dutton & Co., by same, 5 bs., 41 coils manillas.
Horace Dutton & Co., Gardenia, Hamburg, 174 bs. manillas.
F. Salomon & Co., by same, 72 bs. manillas.

Sizing.

C. A. Cheney, Georgian, Liverpool, 139 bags.
Warren & Co., Michigan, Liverpool, 141 bags.

Bleaching Powder.

J. L. & D. S. Riker, Michigan, Liverpool, 265 cks.
J. L. & D. S. Riker, Georgian, Liverpool, 74 cks.
Linder & Meyer, by same, 77 cks.

Caustic Soda.

J. L. & D. S. Riker, Georgian, Liverpool, 40 drums.
Edward Hill's Sons & Co., by same, 100 drums.

Soda Ash.

J. L. & D. S. Riker, Georgian, Liverpool, 88 bags.
Wing & Evans, by same, 129 cks., 841 bags.
Mason, Chapin & Co., by same, 20 cks.
J. L. & D. S. Riker, Michigan, Liverpool, 200 bags.
Warren & Co, by same, 35 cks.

Soda Crystals.

Warren & Co., Michigan, Liverpool, 280 bbls.
Warren & Co., Georgian, Liverpool, 140 bbls.
Jerome Marbie & Co., by same, 140 bbls.
W. H. Lincoln, by same, 120 bbls.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED NOVEMBER 10, 1894.

Paper.

A. Hartung & Co., Italia, Hamburg, 12 cs.
Chas. Beck Paper Company, Westhall, Hamburg, 57 cs.
A. Hartung & Co., by same, 36 cs.

Paper Stock

Order, Barbara Preve, Genoa, 410 bs. cotton waste, 242 bs. bagging, 98 bs. jute waste.
Same, Carthagenian, Glasgow, 35 bs. bagging.
Jessup & Moore Paper Company, Westhall, Hamburg, 286 bs. rags.

Soda Ash.

Brown Brothers & Co., Lord Gough, Liverpool, 434 bags, 95 cks.

Bleaching Powder.

J. L. & D. S. Riker, Carthagenian, Glasgow, 190 tcs.

Antichlor.

Order, Switzerland, Antwerp, 60 bbls.

China Clay.

Order, Fred. E. Scannell, Fowey, 1,500 cks.
Same, Carthagenian, Glasgow, 349 cks.

Sizing.

Order, Barbara Preve, Genoa, 31 bags old pickers.

EXPORTS of Paper, &c., from New York for the Week Ended November 13, 1894.

BOOKS, cases, to Central America, 3; British East Indies, 3; Southampton, 2; British possessions in Africa, 10; British West Indies, 3; Liverpool, 4; Chili, 1; Leipsic, 2; Mexico, 10; Peru, 7; Venezuela, 1; Antwerp, 2; British Australasia, 2; Bradford, 2; Bordeaux, 6; British Honduras, 2; Danish West Indies, 3; Glasgow, 3; Japan, 7; Newfoundland, 8; Rotterdam, 1.

PAPER, to Cuba, 101 pkgs.; British West Indies, 93 pkgs.; Central America, 776 pkgs.; Dutch West Indies, 26 pkgs.; Mexico, 374 pkgs.; London, 108 cs.; Brazil, 28 cs.; Liverpool, 53 cs.; British possessions in Africa, 9 pkgs.; British Australasia, 26 pkgs.; Nova Scotia, 8 cs.; San Domingo, 78 pkgs; Colombia, 60 cs.; Antwerp, 1 cs.; Dublin, 1 cs.; Danish West Indies, 13 pkgs.; Ecuador, 3 pkgs.; Glasgow, 1 cs.; Hayti, 4 pkgs.; Leeds, 271 pkgs.; Schoenenwerd, 13 bdls.; Venezuela, 11 cs.

WALL PAPER, cases, to Hayti, 1; Newfoundland, 1.

STATIONERY, cases, to Cuba, 3; Venezuela, 3; London, 17; British West Indies, 2; Liverpool, 4; British Australasia, 5; Brazil, 23; Bremen, 1; Dutch West Indies, 2; Colombia, 4; Mexico, 47; Manchester, 4; Newfoundland, 1; Bordeaux, 2; British Honduras, 35; Christiania, 1; Danish West Indies, 2; Ecuador, 1; Havre, 2; Hull, 1; Japan, 2; San Domingo, 5.

CARDBOARD, cases, to Mexico, 1; Venezuela, 1.

PAPER CAPS, cases, to Brazil, 1.

CARDS, cases, to Chili, 2; Venezuela, 2; British Australasia, 4; Brazil, 7.

AGGREGATES AND VALUES.

Paper, reams.....	—	—
Paper, pkgs.....	1,784	$32,845
Paper, cases.....	266	3,975
Books, cases.....	75	3,813
Stationery, cases.....	163	10,651
Rosin, bbls.....	1,879	4,521
Totals.....	4,169	$45,105

Exports General Merchandise for the week ended November 13, 1894..... $6,044,519

Belting Tests.

Controversies as to the adhering and transmitting qualities of various kinds of belting are common, and makers of new kinds often take advantage of this difference of opinion among experts and the users of belting in general to make loud claims for the superior transmitting qualities of their belts; and without some way of demonstrating the truth or falsity of these claims, the purchasers of belting have to take the word of the makers. It is, however, not necessary for any user of belting to take anybody's word on a question of that kind if he is not afraid of a very small expense and a very little trouble.

Every shop and every mill can have a simple tester rigged up in this way: Select a short piece of shafting, say, 3 feet long, on which fit a pulley of from 16 to 24 inches in diameter and 6 inches face. Fasten the pulley securely to the shaft, as is ordinarily done for work; then fix clamp supports as substitutes for journal boxes, and hang the shaft about 4 feet above the floor at any convenient place that will be out of the way. Clamp the shaft tightly so that it cannot turn, and the tester is ready for business.

Throw a piece of 6 inch belt over the pulley and attach a tension weight to one end of it, with the weight resting on the floor. To the other end, by means of a hook, hang a small platform, on which all sorts, sizes and descriptions of weight can be piled. Pieces of iron of any kind can be used, or lead or anything that has weight to it. With these odds and ends the platform is to be loaded until the belt slips and raises the tension weight from the floor. The platform weights can then be weighed and a record made of the weight.

The standard test should be made with a piece of new leather belt of good quality, and by its record all other belts should be measured. The bottom of the platform ought to be at least 1 foot from the floor when empty, so as to have some distance to fall through when a belt is being tested.

By this standard all other kinds of belts may be measured, and every dealer in belts desirous of placing his goods should be asked to furnish a short piece of 6 inch belting with which to make a test. If it requires more weight to slip the belt on the pulley with the same tension, then it is a better power transmitter than the leather belt. If it slips with less weight, then it is not so good. In this simple way all kinds of belts can be tested in relation to each other, and records kept for convenient reference.

The testing should not be confined to new belts alone, but those that have been worn a while should also be tested to discover the effects of age. Some belts may be good transmitters when new, and poor when run a while, and the reverse.—*R. James Abernathey.*

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NEW YORK: SATURDAY, NOVEMBER 17, 1894.

THE CHEMISTRY OF PAPER MAKING is now on the market; octavo, 532 pages, cloth, $5.00, postpaid. Every reader of THE PAPER TRADE JOURNAL interested in the subject could not make a better investment of the money. Particulars in another column.

In press: HOFMANN'S TREATISE ON PAPER MAKING; to be published in twenty parts of about eighty pages each, at intervals of not less than sixty days; price *one dollar* cash in advance for each part, postpaid. Number One will appear in November next. Subscribers should not delay in placing orders.

THE AMERICAN DICTIONARY OF PRINTING AND BOOKMAKING will be delivered to any person sending twelve dollars for it. This great work, royal octavo, 600 pages, half-bound, is a mine of information on every subject comprehended by its title.

HOWARD LOCKWOOD & CO.

WE illustrate and describe on the first page of this issue of THE PAPER TRADE JOURNAL a new apparatus designed for surface coating paper. The alleged advantage of this machine is that it not only simplifies the work but reduces the cost of coating.

IT is observed that in several sections manufacturers, among them some paper mill owners, have notified their help of an advance in wages. There can be no better practical illustration of returning business confidence than this, and certainly nothing more convincing to employees of the conditions which enure to their advantage and which they should henceforth aid to maintain.

THE new issue of bonds about to be placed by the Government has in it the elements of a distasteful surprise for the public, which has been led to believe that there would arise no further need of increasing the bonded debt of the country. In inner financial circles, however, such a course has been expected and undoubtedly prepared for as being inevitable under prevailing conditions. The Treasury has been running behind for some time at a serious rate, and the current month seems to offer no encouragement in the direction of improvement. On November 1 the gold reserve was $61,000,000, or nearly $40,000,000 below the amount hitherto regarded as essential to the maintenance of specie payments. The driblets of gold finding their way into the Treasury have hardly sufficed to meet current demands, so that the expectation of replenishing the reserve from the receipts of the Treasury had to be abandoned and an issue of bonds was resorted to. These are the simple facts as we understand them.

THAT this new loan will enable the Government to keep the gold reserve up to the requirements of the law is not at all certain. It seems to us very much like running around in a circle, in which original conditions continually repeat themselves. The resources of the Treasury for acquiring gold seem to be limited and precarious, while at the same time the financial credit of the nation depends upon its honoring every demand for gold made upon it, whether coming from foreign sources or from local concerns intent on depleting the Treasury for purposes of their own. Customs dues and other indebtedness to the Government are paid in paper, while its own indebtedness—greenbacks, Treasury notes, &c.—is paid in gold on demand. The paper money received is issued again to meet Government expenses, and is again gathered up by the money changers for the purpose of drawing gold from the Treasury vaults, and so the endless round continues.

THE gold obtained by the February issue of bonds was, as it appears, returned to the banks, and there seems to be nothing whatever to prevent the present loan from following in the same track. The suspicion is abroad that the enormous surplus of gold held by the banks has been accumulated for this very purpose, a suspicion which deepens into certainty when the course pursued by them last summer in refusing to come to the relief of the Treasury's fast vanishing gold is taken into consideration. Even then their vaults were overloaded with the yellow metal, yet they stood by coldly and viewed the depletion of the Government's stock of the precious metal with outward unconcern. It is not surprising, therefore, that the new loan finds favor with these financiers, who see the cycle completed and the old necessitous conditions restored. The system seems to be weak, and the power of the banks over Treasury finance too great. A return to the system of paying customs dues in gold is highly desirable.

THE legal wrangle in Nebraska over the Newberry freight rate law, which fixed an arbitrary maximum limit to freight rates, has at last been ended by a decision of Judge Brewer in the United States Circuit Court of Appeals. Immediately upon the enactment of the law an injunction restraining its execution was granted until the legal questions involved were settled in court, the railroads claiming that no constitutional authority existed for the exercise of such arbitrary legislative power. Judge Brewer in his decision says that legislatures may regulate rates as against any points of constitutionality raised by the railroads, but that they have no right to cut into the incomes of properties so deeply as to seriously impair their value, which he thinks the Nebraska law did, taking into consideration the conditions of trade at the time.

THE Government is in a fair way to find out that the path of the manufacturer is not strewn with thornless roses and that the people have not lost the faculty of making their complaints heard. The poor quality of the new issue of postage stamps—the first turned out of the Government workshops, so to speak—has brought a cumulative storm of protests upon the Department at Washington, which has had the effect of causing an order to be issued calling in all that remains unsold of the entire issue. How much the Government will lose by this poor job is not known, but perhaps a good deal will be made on the experience side of the account.

WE had occasion last week to call attention to a manifest opposition to the Baltimore plan for improving the banking system of the country, our reference then being to objections to Government guaranty and control. Attention is now called to a disposition in some quarters to dispute the principle which makes the note holder a preferred creditor by giving him a first lien on the assets of banks. There are of course different way of looking at the claims of depositors and note holders, and quite naturally each class considers its own superior; but there are considerations which, if there is any superiority, would readily assign it to the note holder. First we have to look upon the note holder as a person having no personal relations with the bank, but using its paper in the transaction of business, and that his only dependence upon the good faith of the bank of issue is its promise, printed on the face of the note, to redeem it in something of intrinsic worth. This alone gives money value to the paper and makes it a useful tool of trade. Bank notes are put into circulation mainly through loans from which the bank receives a profit, while the notes themselves pass immediately into the hands of innocent holders, whose only security in using them depends upon the good faith of the pledge printed on their faces. It will, at once, be seen that the relation of the depositor to the bank is entirely different. He uses the bank as a convenience to himself, which offsets any possible risk. His dealings with it are voluntary and subject to his own will and pleasure, and if the bank profits by his patronage he, too, profits by the safe keeping of his funds and the convenience which bank facilities afford him. The note holder, however, is an involuntary creditor; the notes are his medium of exchange in transacting business, his use of them a necessity, although an undoubted convenience. The matter, any way, should not be regarded from the narrow standpoint of bank profits or depositor's convenience, but from the broader platform of the general good of trade and industry. From such a standpoint the note holder's claim cannot be relegated to a secondary place because individual holdings are small and scattered as compared with the voluntary risks taken by depositors. The certainty that each bank note would surely be made good to the holder upon demand has been a tremendous factor in building up the widespread confidential trade relations which now exist in the country. A less secure scheme, one in which the note holder would be regarded as a less important creditor than he is now, would introduce elements of confusion into trade the results of which cannot be gauged. The animus of this antagonism to the status of note holders as preferred creditors is found in the desire for greater profits by the banks, the depositor being, in their judgment, a more paying patron. This is an unworthy stand to take, one which endangers the hope of a sound, wise and trustworthy solution of the difficulties which the subject of our financial system offers.

Watermarks.

BY DANDY.

Those members of the paper trade who are interested in epitaphs may be interested in the following, which is a startling example of how the best intentions often produce undesirable results. The epitaph referred to is:

> Sacred to the Memory of
> The REV. —— ——,
> Who, after twenty years' unremitting labor as a missionary, was accidentally shot by his Kitmagar.
> "Well done, thou good and faithful servant."

The commendation evidently, according to the reading, lands on the wrong man.

Electricity is a great thing, and is being applied to a variety of purposes. For instance, there is the correspondent of a London paper who asks how to apply an electric current to the purification of well water, the objection to the water being that it turns whiskey black.

The editor of the journal to whom the query is addressed says that "the writer has by no means proved that the water is at fault and suggests that he look to his whiskey as well, as poor sorts of whiskey may contain sulphuretted hydrogen or tannin, which blacken iron salts. If the electrical treatment should prove to be too expensive, he recommends the American method of consuming the whiskey and water separately, and adds that he need not fear that the black compound will form in his own well, as the presence of the gastric juice will prevent the formation of any black iron sulphide."

If this method does not work satisfactorily there is no law against discontinuing the use of the water altogether.

Most of the American wells do not produce water of that kind, however, except in Kentucky, and there the question has not come up at all, as in that State water is not applied to any such use.

The midwinter meeting of the American Paper Manufacturers' Association will probably be held in New York during January. It is likely to be a "rousing" one if all promises are carried out. There certainly ought to be a large and representative meeting, and it is probable that many points of interest will be presented to those in attendance.

The officers of the association are to be the guests of their president on Tuesday evening next, and matters will be informally discussed after the "inner man" has been satisfactorily catered to.

The ladies are now interested in helping along the consumption of sulphite fibre, and dresses are stiffened and high shouldered sleeves are upheld by this paper making material. The sulphite, which is of the unbleached variety, is run on a paper machine, and is made up in three thicknesses—light, medium and thick. After it leaves the machine the converter takes it in hand, and he treats it chemically and passes it through rolls, which leave it in a soft, pliable condition. It is exceedingly warm, and garments can be readily made of it.

An Eastern mill is also making paper which is used by a Boston house for making garments. When a fellow gets through with his clothes, made of pulp or paper, he can use them for kindling the kitchen fire.

Trade Talks.

Albert F. Neumann, of the Albert F. Neumann Manufacturing Company, Sandusky, Ohio—The company with which I am connected will be incorporated after January 1. Its capital stock is $250,000, all of which has been paid in and is now in the hands of the treasurer, and it is intended, should circumstances warrant, to increase it to $500,000. The officers of the company are: C. F. Bronson, president; K. H. Perkins, treasurer; L. Ladenburg, vice-president, with myself as general manager. A plot of 65 acres fronting on Sandusky Bay has been purchased and we have, therefore, a good water front and easy water carriage, besides four different railroad connections. Some prominent men of Philadelphia are interested in the company. We will begin the construction of a mill as early in 1895 as possible. Plans for the mill, which will cover five or six acres, have been drawn by A. B. Tower & Co., of Holyoke. A portion of the machinery has already been contracted for. The beating engines will be built at Pittsfield, Mass. There will be ten 1,000 pound beaters and three 2,000 pound washers; one 92 inch and one 110 inch Fourdrinier machines, each provided with sixteen dryers, 48 inch face, and a double stack of calenders. These machines will run from 250 to 275 feet per minute. There will also be constructed additional drying apparatus, with cylinders 7 feet in diameter and 68 inch face. Two calender rolls and winder for making special waterproof paper will be set above the machine. All of the machinery will be first class, of the latest improved make, and the mill will be a model. We will run on Nos. 1 and 2 book, medium writings and waterproof papers and bags. The building will be of brick, with a stone foundation rising about 8 feet above the ground. The digester room will be three stories high, the finishing room two stories, the rag room two stories and the remainder of the buildings one story each. The mill will have a frontage of 463 feet and will be 500 feet deep in its longest part from front to rear. It will be lit by electricity. If we use the water from the lake we will put in a filter plant; otherwise we shall sink a well. The main engine will be 600 horse power. There will be a battery of 150 horse power steam boilers and several smaller engines for the electric plant and beaters and other parts of the buildings, and a special engine for each machine. We shall make soda fibre as well as paper, and instead of using eight or ten digesters we will employ only two each 10 by 30 feet, discharging therefrom six to eight times per day, according to the kind of wood operated upon. The wood will be treated before it reaches the digesters; it will be first chipped and then put through a grinder like a coffee mill to equalize the size of the chips and will then go to a round tank, being carried there by chain buckets. This tank will contain an apparatus for distributing the wood evenly and compactly, after which a special chemical solution will be put in, which will disintegrate the wood to a certain extent. After remaining in the tank for about two hours the wood will be ready to go into the digester when that is empty. The tank will be located on a floor about 8 feet above the digesters and empty into them by gravity. We will get our wood by lake and our coal by train direct to the boiler house. A track will run to the finishing room, where we will load the product therefrom onto the cars. Owing to the difficulties and delays occasioned by tariff legislation and the death of one of the parties first interested in the project, the construction of the mill was deferred. The stockholders have determined to delay incorporation until the work on the building is begun. The main office and warehouse of the company will be at New York, and for the present communications should be addressed to me at the Morton House, this city.

Changes, Removals and New Firms.

Mitchell, Ore., has a new paper called the *Herald*.

Orient, Ia., has a new paper called the *Free Press*.

Monroe, Ga., has a new weekly paper called the *News*.

Rondo, N. Dak., has a new paper called the *Disc-Harrow*.

J. O. Shaw, Bath, Me., has opened a book and stationery store.

The *Reformer*, Wilmington, Del., has suspended publication.

Memphis, Tenn., has a new daily paper called the *Morning Journal*.

Cambridge, N. Y., has a new weekly paper called the *Valley Record*.

Chicago has a new monthly periodical called the *Picture Magazine*.

Israel & Langhorst, stationers, Brooklyn, N. Y., have dissolved partnership.

Brady & Corsaw, Olean, N. Y., have opened a book and stationery store.

Naugatuck, Conn., has a new paper called the *News*, edited by Irving J. Keyes.

Nolan & Anderson, publishers, Philadelphia, Pa., have dissolved partnership.

P. H. Swift, publisher, Rice Lake, Wis., has been succeeded by H. M. Hilliker.

Wonewoc, Wis., has a new paper called the *Gazette*, published by H. H. Dunn.

The *Occident*, a Presbyterian paper published in San Francisco, Cal., has suspended publication.

Platt & Thompson, dealers in wall paper, &c., New Haven, Conn., have dissolved partnership.

Mr. and Mrs. T. Von Meddis, Springfield, Ill., will soon open a stationery and book store in that city.

F. T. Stone, Warren, Ohio, has opened a book and stationery business in the Franklin Block, that town.

Olympia, Wash., has a new Populist weekly paper called the *Appeal*, published by F. A. Booth.

Chas. H. Wahl & Co., dealers in wall paper, &c., Chicago, Ill., have been succeeded by A. Muus & Co.

G. S. Campbell & Co., wholesale paper dealers, Yonkers, N. Y., have been succeeded by Paton & Howard.

Germantown, Pa., has a new weekly paper called the *Astonisher*, published in the interest of the colored people.

The Tennessee Fibre Company, Memphis, Tenn., has been recently incorporated with a largely increased capital.

W. M. Edwards, of the W. M. Edwards Company, stationers, Los Angeles, Cal., has sold his interest in the business.

The students of Mt. Holyoke (Mass.) College have begun the publication of a monthly magazine called *Mt. Holyoke*.

Chagrin Falls, Ohio, has a new semi-weekly newspaper called the *Summit Republican*, published by W. W. Warner.

K. Gilmore, stationer and bookseller, Council Bluffs, Ia., having taken a partner, the new firm name will be Gilmore & O'Donnell.

The *Nonpareil*, Council Bluffs, Ia., one of the oldest daily papers in the State, was sold at a receiver's sale on the 10th inst. to E. E. Hart for $10,000.

M. B. Kelley and J. W. Hurlburt have leased the paper mill at Fayetteville, N. Y., and will run it under the firm name of the Fayetteville Paper Company.

J. H. Curryer & Co., printers, Mankato, Minn., have sold an interest in their business to J. W. True. A bindery outfit is to be added to the establishment.

Graham & Son, publishers of the *Enterprise*, Melita, Man., have dissolved partnership, J. B. Graham assuming control of the newspaper and printing business.

The J. P. Lewis Company, to manufacture pulp and paper at Beaver Falls, Lewis County, N. Y., has been incorporated, with

capital of $80,000. Directors—James P. Lewis, Julia E. Lewis and S. E. Slocum, of Beaver Falls.

The *Republican*, Fargo, N. Dak., has been purchased by the proprietors of the *Forum*, same city, and the two papers will be consolidated under the name of the *Forum and Republican*.

The Eagle Printing and Publishing Company, New York, has been incorporated to do a general printing and publishing business. The directors are: Robert D. Ingram, Charles B. Hamlin, Ernest Roche, Wm. P. Keating and Charles S. Clark, all of New York city. Capital stock, $10,000.

Failures.

The *Daily Tribune*, Cheyenne, Wyo., has been sold under foreclosure of a second chattel mortgage.

Wellendorf & Alt, stationers, &c., Chicago, Ill., have been closed out on foreclosure of a chattel mortgage for $2,500.

The sheriff on Tuesday sold out the effects of the Hyde-Baker Printing and Publishing Company, 12 Jacob street, New York, realizing $1,000.

The property of Joseph C. Klein, paper dealer, doing business as J. C. Klein & Co., Easton, Pa., is in the hands of the sheriff. The liabilities are reported as being $9,000.

James A. Reid, printer and publisher, Providence, R. I. has made an assignment to Charles H. Hoadley. The principal creditors are said to be paper dealers. Assets and liabilities are not yet known.

Chas. S. White, paper manufacturer, Waldwick, N. J., has made an assignment to David S. Pell. Mr. White's troubles are attributed largely to the suspension of W. A. Bingham & Co., of which concern he is a creditor.

Fires.

Charles Devlin, dealer in paper stock, Philadelphia, Pa., has been damaged by fire. Loss, $1,500.

H. B. Brainard, dealer in wall paper, &c., Hartford, Conn., has been damaged by smoke and water. Insured.

The pulp mill of the Buckingham Manufacturing Company, Montreal and Buckingham, Que., has been destroyed by fire. Insured.

The office of the *Telegraph and Star*, Hastings, Ont., was burned out on November 12. J. H. Scriver, the owner, was damaged $600; no insurance.

Fire broke out in the printing establishment of Albert Datz, Jersey City, N. J., on the night of November 9 and burned out the first and second floors, practically ruining their contents, which consisted of presses and stock. The building occupied by the plant is owned by Mr. Datz, and will be rebuilt as soon as possible. There was an insurance of $25,000 on the printing plant and $7,000 on the building.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
Milton W. Bradbury, Boston, Mass.	$250
Samuel B. Fuller, Pawtucket, R. I.	2,128

WESTERN STATES.

The *Morning Times* Company, Oakland, Cal.	6,500
J. E. & W. H. Baumann, New Athens, Ill.	720
Howard G. Goodwin (Lane & Goodwin), Lafayette, Ind.	800
Lemon & Schlaefke, Davenport, Ia.	700
W. H. Price, Prairie City, Ia.	318
P. S. Everhart, Red Oak, Ia.	1,078
J. A. Farmer, Fort Scott, Kan.	694
Fort Scott Paper Company, Fort Scott, Kan. (Real.)	5,000
E. R. Callender Printing Company, Kansas City, Kan.	125
W. H. Nelson, Smith Centre, Kan.	2,200
A. Lee Smith, Crystal, Mich.	555
R. Freedman & Co., Detroit, Mich.	640
Julius Schrenbeck, Detroit, Mich.	300
J. P. Albin, McCook, Neb.	685
Joseph T. Camp, Scribner, Neb.	399
George W. Collamore, Utica, Neb.	350
William E. Stilson, York, Neb.	315
George H. Tyler, Chillicothe, Ohio.	950
Boardman Wall Paper Company, Seattle, Wash.	2,240
J. E. Tuttle Company, Cheyenne, Wy.	1,000

SOUTHERN STATES.

Wm. T. Henderson, Gallup, N. M. (Real)	230

LIENS DISCHARGED.

Andrew W. Mitchell, Boston, Mass.	300
Jacob Laut, Duluth, Minn.	418
Thos. J. Caie (Caie & Montgomery), Cincinnati, Ohio (Real)	5,000
Henry Huesman (E. Huesman & Brother), Cincinnati, Ohio (Real)	1,500
M. B. Kelley, Warrendale, Ore. (Real)	1,200

In Town.

J. Fred Webster, Orono, Me.; R. W. Potter, Erie, Pa.; E. P. Lindsay, S. A. Shannon and C. W. Rantoul, Boston, Mass.; W. O. Russell, Lawrence, Mass.; W. A. Mullen, Mt. Holly Springs, Pa.; D. W. Mabie, Ballston, N. Y.; Wellington Smith, A. W. Eaton and W. H. Eaton, Lee, Mass.; E. R. Redhead, Fulton, N. Y.; M. B. Megargee, Philadelphia, Pa.

Personals.

D. F. French, of Horace Dutton & Co., arrived here on the Teutonic this week.

John N. Forbes, formerly with W. A. Bingham & Co., is now with Walters & Place, New York.

I. S. Dillingham, of Boston, Mass., showed his cheerful face to the New York trade this week, and was in his usual good humor.

H. C. Hulbert, of H. C. Hulbert & Co., who has been on a business and pleasure trip to the other side, arrived here last Saturday on the Campania.

Col. A. G. Paine, president of the American Paper Manufacturers' Association, will entertain the officers of the association and the members of the membership committee at dinner at his house on Tuesday evening next.

M. A. Ring, Jr., has severed his connection with the Franklin Paper Mills, Hoboken, N. J., and is now engaged in forming a company to build a 10 ton mill in the same city. The new mill will manufacture building paper.

Theodore B. Anderson, brother of John F. Anderson, Jr., and Frank Anderson, of J. F. Anderson, Jr., & Co., was severely injured by a trolley car in Brooklyn a few days ago. There was a blockade of cars on the south track of Fulton street. He started to go across, when a car on the north track came rushing along, struck him, knocked him about twenty feet and injured him terribly. He is now convalescent, and it is fortunate that he was not killed.

On Wednesday afternoon Ida Veronica O'Meara, daughter of Maurice O'Meara, was married to William Thomas Lyons at St. Francis Xavier's Church, Sixth avenue and Carroll street, Brooklyn. The bride wore a white satin dress trimmed with duchess lace. Her niece, Grace Eginton, officiated as maid of honor, while her sisters, May and Lillian O'Meara, acted as bridesmaids. The ushers were Maurice O'Meara, Harry Leonard, James Morse and Frank Oliver. A reception followed at the residence of the bride's parents, 188 Berkeley place.

Obituary.

A. B. Freeman, of Freeman & Grow, printers, Lebanon, N. H., is dead.

Henry H. Woodbury, proprietor of the Woodbury Label Printing Company, Woodstock, Vt., died suddenly at his home in that city on Sunday, November 4, aged fifty-five years.

Frank G. Helme, for several years representing Frank B. Garrett, paper dealer, Syracuse, N. Y., died suddenly recently of peritonitis. He was thirty-five years old and left a widow and one child.

Peter Wolt, one of the oldest chemical merchants of New York, died on November 14, at his home in Orange, N. J. He was born in New York in 1829. He entered the chemical house of Davis, Morrison & Co. when a boy, rose in position until he entered the firm and finally succeeded to the business, the firm name being Davis, Wolt & Co., a house well known all over the country in the line of heavy chemicals. He leaves a widow, three daughters and one son.

Charles Young died at Greeneville, Conn., on November 5. He was at one time foreman of the calender department of the Chelsea Paper Manufacturing Company, a position which he held for twenty-six years. He enlisted as sergeant in Company C, First Connecticut Artillery, from Norwich, March 29, 1862, and served two years, reenlisting in 1864 and serving faithfully until mustered out September 25, 1865. He was a man respected in the community for his fidelity to duty and social qualities. He leaves a widow, three sons and two daughters.

John Daveris, Sr., aged seventy-six, died at Dalton, Mass., on November 10, after an illness of eight weeks with fever. He was born in Limerick, Ireland, in 1818. He came to America when twenty-eight years old, and located in Dalton. He soon obtained a position in the paper mills then owned by Carson, Wilson & Martin. He worked there as a paper maker until the year of the panic, and then found employment in the Old Berkshire Mills, and continued there in service until twelve years ago, when he retired from active life. He married Bridget Monahan on August 6, 1854. He is survived by her and nine children.

Joseph L. Sheffield, the elder son of the late J. B. Sheffield, of Saugerties, N. Y., and brother of W. R. Sheffield, of the New York and Pennsylvania Company, committed suicide at the Mount Morris Hotel, Third avenue and 130th street, New York, on Sunday night last. Sheffield went to the hotel on October 24 and registered as P. M. Doyle, Perth Amboy. Last Sunday morning at 1:15 he went to bed. At 5:30 o'clock that evening, as he had not left his room, Clerk J. D. Moore rapped on the door. Getting no answer he broke in the door and found Sheffield fully dressed with his arms crossed on his breast, lying dead in the bed. On a table near him was an empty morphine bottle. The suicide left behind a six page letter, full of incoherent sentences, in which his right name was disclosed. The letter said that he was tired of life because his relatives had wrongfully withheld $30,000 from him. They on the other hand claim that when he was disinherited by his father they took care of him. He was at one time employed in his father's mill, was afterward a clerk with White & Sheffield in Beekman street, and later had drifted into other lines. He was addicted to gambling, and while he possessed ability and capacity, was too restless to remain very long in one place. Lately he had been clerking for the H. B. Claflin Company.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, November 16, 1894.

THE MONEY MARKET.—The stock market is quiet and nearly all the moving shares closed at lower figures. Call loans on stock collateral are made at the Stock Exchange at a uniform rate of 1 per cent., and the market is in the control of private bankers. The undertone of the time loan market is a shade harder for short terms because of the bond issue, but easy for long dates. There is little business for any time. Brokers quote 1½@2 per cent. for thirty and sixty days, 2@2½ per cent. for ninety days and four months, and 3 per cent. and slightly higher for longer dates. Little new commercial paper is being made in New York. Offerings are largely confined to the paper of country makers usually sold to local banks. Rates quoted by brokers, some of them nominal, were as follows: 2½@2¾ per cent. for sixty and ninety day receivables; 3 per cent. for four month singles and prime commission house names and 4@7 per cent. for singles not known. The market for foreign exchange was dull and steady, without special new feature. Importers' purchases of bills were light. Posted rates were $4.87 for sixty days and $4.88 for sight. Actual rates were $4.86@4.86¼ for sixty days and $4.87@4.87¼ for sight.

THE PAPER TRADE.—As a rule there is considerably more business being done by paper manufacturers, and the report "busy and full of orders" comes to hand more frequently than it has for a long time. There continues to be some complaint as to the water supply, and in some quarters streams are too low to make mill men feel entirely comfortable. Dealers have been having a very fair run of trade, but more business could yet be done without calling out all the energies of the trade.

JUTE BUTTS.—There is little doing and conditions have not changed materially. We hear of paper quality, December and January, offered to mills at 1.07½c.

WOOD PULP.—There is a very fair call for Ground Wood and the market remains firm. Values are yet too high as compared with those in foreign markets to allow of export, and Maine mills as a rule are not inclined to grant concessions just at present.

WOOD FIBRE.—There continues a steady call for Chemical Fibre. Domestic Soda is quoted at 2¾@3c. for Bleached, and 2½c. for Unbleached. Domestic Sulphite is quoted at 1¾@2¾c., as to quality, for Unbleached, and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 2.50@3.15c.; Bleached, do., 3.85@4¼c.; Bleached Straw Pulp, 3.80c. This week there were imported at this port 34 tons of Chemical Fibre, being all from Hull.

FOREIGN RAGS AND PAPER STOCK.—There is a steady call for small quantities, but none of the sales are important. There was sale of 100 tons Hiogo Blues on spot on p. t. Imports for the week aggregated 4,948 bales and 34 tons, being 3,169 bs. rags, 138 bs. papers, 34 tons chemical fibre and 1,641 bs. manillas. Ports of shipment and quantities are as follows: Glasgow, 17 bs. papers; Hull, 34 tons chemical fibre, 170 bs. manillas; Liverpool, 132 bs. manillas; London, 204 bs. rags, 76 bs. papers, 1,147 bs. manillas; Stettin, 2,965 bs. rags, 45 bs. papers, 192 bs. manillas.

DOMESTIC RAGS.—There is a fairly steady call for stock and prices are a shade stronger, some grades, which are not in plentiful supply, having advanced slightly.

BAGGING, &c.—There has been some business done in Gunny Bagging this week. There was one sale of 100 tons No. 1 at 1.10c. and a rumored sale of 1,000 tons at a considerably lower price, while some stock on dock is being offered at 1.05c. Other grades have not developed much business this week. Imports of manilla stock for the week aggregated 1,641 bales, being 170 bs. from Hull, 132 bs. from Liverpool, 1,147 bs. from London and 192 bs. from Stettin.

OLD PAPERS.—There is a steady call for Old Papers. We quote: No. 1 Hard White Shavings, 2½@2¾c.; No. 1 Soft White do., strictly free from wood, 2.15c.; Soft White do., ordinary, 1¾@2c.; Old Ledgers, 2c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1@1¼c.; Mixed Shavings, No. 2, ¾c.; Extra No. 1 Manillas, 90c.; No. 1 Manillas, ordinary, 75c.; No. 2 Manillas, 60c.; Light Book Stock, 60c.; Folded News, 35c.; Mixed Papers, 35c.; Commons, 25@30c.; Straw Clippings, 45c.; Binders' do., 45c.

STRAW.—There is a fair demand for straw, and the market is steady. We quote: Long Rye at 50@55c.; Short Rye at 40@45c.; Wheat at 40c.; Oat at 35@45c.

ROSINS.—The market is quiet, but is firm in tone. We quote: Common to Good Strained, $1.62½@1.70; E, $180@1.85; F, $2; G, $2.20@2.25; H, $2.30@2.35; I, $2.65@2.70; K, $2.95; M, $3.20; N, $3.35; W G, $3.55@3.60.

CHEMICALS.—There is a somewhat better all round trade in paper makers' chemicals. Bleaching Powder has been moving more freely, and with spot well cleaned up it is a trifle difficult to get goods for immediate use. Alkali is firmer and there is a more active demand. The Caustic Soda market is steadier, while Sal Soda is in good call. During the week there have been sales 50 cks. Bleach at 1.85c.; 25 tons Soda Ash at 1⅛c.; Caustic Soda, 70 per cent., at 2.30c., and 74 per cent. at 2.32½c.

CHINA CLAY.—China Clay continues to receive a good share of the interest and demand of customers for these specialties. Orders are very good in size and the week has witnessed a fair ordinary business and at good prices.

TWINES.—There is a very fair business in progress. We quote: Sisal Hay Rope, 5@6c.; Sisal Lath Yarn, fine, 9¼c., and medium, 9c.; Jute Lines, 7½c.; Jute Ready, 7@7½c.; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 9¼c.; medium, 8¼c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9½c.; 4½ and 6 L Jute, 9c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c., Russian Hemp Hay Rope, 9c.

COAL.—The unrestricted production of Anthracite is causing trouble, and individual operators held a meeting this week to consider the situation. Cutting is going on and will possibly be carried further than it is now. The market for soft coal is demoralized, and there are threats of strikes because of reduced wages.

EDWIN BUTTERWORTH & CO.,
MANCHESTER ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing, Wood Pulp, Moist and Air Dry Pulp, Soda and Ground Pulp,
(P) 83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street,
JAMES FIRNIE, A. S. DEMAREST, } Managers.

WATERBURY
Felts and Jackets,
MANUFACTURED BY
H. WATERBURY & SONS CO.,
ORISKANY, N. Y.
Adapted to every grade of paper, from the finest to the coarsest.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are unequaled for durability.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.94
Flat Caps, superfines	14	@	16
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3	@	3½
Poster	5	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	2
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20 - 30, ℔ ream	1.10	@	1.35
Tissues, black, 20 × 30, ℔ ream	1.40	@	1.50
White tissue, 20 × 30, ℔ ream	85	@	1.00
White tissue, 24 × 36, ℔ ream	1.30	@	1.50
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¼	@	6½
Manillas, No. 2	5	@	6
Manillas, Bogus	2¼	@	3½
Wrapping Parchment	16	@	....
Tissue Manillas, full count, weight and size, 24 × 36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	47.50	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	24.00
Straw Wrapping, basis, 15 × 20, 15½ lbs., 20 sheets—			
36 × 40, from 38 to 42 lbs. ℔ rm	85	@	....
30 × 40, from 30 to 34 lbs. ℔ rm	....	@	72
24 × 36, from 24 to 26 lbs. ℔ rm	....	@	60
22 × 32, from 24 to 26 lbs. ℔ rm	56	@	....
20 × 30, 21 lbs., ℔ rm	....	@	44
20 × 30, from 14 to 17 lbs. ℔ rm	36	@	....
16 × 22, from 12 to 13 lbs. ℔ rm	36	@	....
18 × 28	....	@	32
15 × 20, 10 lbs. ℔ rm	17	@	19
15 × 20, from 7 to 8½ lbs. ℔ rm	17	@	19
14 × 18	....	@	15
12 × 16	....	@	13
11 × 15	....	@	11
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1½	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12x18	18	@	20
14x20	22	@	....
Card Middles, ground wood	5½	@	6¼
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	6	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	....	@	1.20
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1⅞	@	¼
Alum, Diamond	....	@	2½
Alum, pearl	2½	@	2¾
Alum, porous	2½	@	2¾
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2¼
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	....	@	1⅞
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℔ cent	2.20	@	2.30
Clay, China, English, ℔ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3½
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	30	@	35
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.62½	@	1.70
Rosins, E, ℔ bbl	1.80	@	1.85
Rosins, F, ℔ bbl	....	@	2.00
Rosins, G, ℔ bbl	2.20	@	2.25
Rosins, H, ℔ bbl	2.30	@	2.35
Rosins, I, ℔ bbl	2.65	@	2.70
Rosins, K, ℔ bbl	2.95	@	....
Rosins, M, ℔ bbl	....	@	3.30
Rosins, N, ℔ bbl	....	@	3.35
Rosins, W G, ℔ bbl	3.55	@	3.60
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2½
Sulphuric Acid, 66 ℔ cent	1	@	1¼
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	3½	@	3¾
No. 2 Whites	2	@	2¼
Common Seconds	1¾	@	2
Thirds and Blues	1	@	1.10
Southern Mixed Rags	80	@	1
Colors, country	½	@	¾
Colors, city	25	@	30
New Calicoes, light	2	@	2½
New Calicoes, dark	1½	@	1¾
Shirt Cuttings, best	4	@	4¼
Shirt Cuttings, good	3½	@	4¼
Shirt Cuttings, unbleached	3¼	@	3½
Shirt Cuttings, unbleached No. 2	2½	@	3
Shirt Cuttings, chevlots	2¼	@	2½
Overall Cuttings, blue	2¼	@	2
Overall Cuttings, brown	2	@	2¼
Shoe Rags, bleached	3½	@	3¾
Shoe Rags, unbleached	3½	@	3¾
Shoe Rags, brown	3	@	3¼
Cotton Flannels, bleached	3¾	@	4
Cotton Flannels, unbleached	3½	@	3¾
Corset Rags, drab	3½	@	3¾
Corset Rags, white	4	@	4½
Tailors' Seconds	1¾	@	1¾
Tailors' Colors	25	@	30
Cotton Canvas	3	@	3½
Cotton Canvas, No. 2	1¾	@	1¾
Linen Canvas	1½	@	2
New Canvas Cutting	4	@	4½
Insole Canvas	3	@	3¼
Print Papers, best	25	@	30
Print Papers, ordinary	....	@	....
Folded News	25	@	30
Old Waste Papers	30	@	35
Manilla Paper, No. 1	1.15	@	1.25
Manilla Paper, good mixed	85	@	90
Manilla Paper, blues	65	@	75
Mixed Book Stock	95	@	1
Books and Pamphlets	1	@	1½
Book Stock, light	72	@	75
Ledgers and Letters	1.90	@	2
Soft Book Shavings	1¾	@	2
Hard White Book Shavings	2¼	@	2½
Leather Board Chips	75	@	85
Straw Chips	35	@	40
Shivey Bagging	1½	@	....
No. 1 Factory Bagging	¾	@	1
Burlap Bagging	1.00	@	1.05
Burlap Bagging, large pieces	....	@	2
Kentucky Bagging	....	@	....
Mixed Bagging	¼	@	⅞
No. 2 Bagging	⅝	@	¾
Shakings, soft	½	@	....
Tarred Shakings	1	@	1¼
Standing Rigging	2½	@	2¾
Standing Rigging, foreign	2¼	@	....
Bolt Rope	2	@	2.10
Oakum Junk, No. 2	1½	@	1¾
Tarred Paper Junk	1.15	@	1.20
Tarred Paper Junk, inferior	⅝	@	....
Manilla Rope	1¾	@	2
Tarred Manilla	1½	@	....
Hemp Strings	1⅞	@	2
Sisal Strings	....	@	1.10
Wool Strings	90	@	1.00
Flax Tow	½	@	1
Flax Waste	½	@	1

Chemicals.

Alkali	90	@	1
Aluminous Cake, currency	1¼	@	1¾
Alum, American ground	....	@	1.35
Alum, American lump	....	@	1.85
Anti-Chlorine	2	@	2½
Bichromate Potash	9	@	9¼
Bleaching Powders	1¾	@	2
Caustic Soda, 74 ℔ cent	....	@	2.65
Clay, English, ℔ ton	14.00	@	18.00
Clay, American, ℔ ton	10.00	@	11.00
Copperas, ℔ lb	65	@	75
Extract Logwood	5½	@	10½
Lime, Rockland, ℔ bbl	85	@	90
Prussian Blue, ℔ lb	32	@	35
Prussiate Potash, yellow	24½	@	25
Prussiate Potash, red	28	@	28½
Rosin, common strained, ℔ bbl	1.90	@	2.50
Rosin, Medium	2.20	@	3.00
Rosin, extra pale, ℔ bbl	3.00	@	4.50
Sal Soda, ℔ lb	....	@	75
Soda Ash, 48 ℔ cent. caustic	1.40	@	1.60
Soda Ash, 48 ℔ cent. carbonated	1.37	@	1.50
Soluble Blue	2.50	@	3.50
Sugar Lead, white	8½	@	....
Sugar Lead, brown	5½	@	5½
Sulphuric Acid, 66°	¾	@	1¾
Terra Alba, ℔ ton	9.00	@	15.00
Ultramarine, ℔ lb	7	@	25
Venetian Red, ℔ lb	70	@	2¾
Vitriol, Blue	3½	@	3¾
Yellow Ochre	½	@	1

Wants and For Sale.

Twenty-five words or less, one dollar each insertion. Over twenty-five words, four cents a word each insertion, up to eighty words. Cash should accompany order.

Over eighty words, or displayed advertising, will be charged for by the inch, according to our regular schedule of rates.

Answers can come in our care and will be promptly forwarded without extra charge.

WANTED—A FIRST-CLASS WRITING PAPER mill to represent in New York and vicinity; am willing to take an interest in same. Address WRITING PAPER, care of Paper Trade Journal.

SITUATION WANTED AS MACHINE TENDER; either cylinder or Fourdrinier; married man; have family; idle six months. Address NEEDY, care of Paper Trade Journal.

WANTED—A STACK OF SEVEN OR NINE chilled rolls. Send full description and price to B. L. H., care of Paper Trade Journal.

WANTED—POSITION AS MANAGER OR assistant manager of paper mill; several years' experience in large book and news plant; satisfactory references. J. L., care Journal.

WANTED—SITUATION TO RUN STEAM engine in paper mill; many years' experience; can furnish best references. Address H. W. LUTHER, 105 Elm Street, Charlestown, Mass.

WANTED, A GOOD PAPER MILL.—Party wants to hire a paper mill for two years, with privilege of five years, or would take an interest in a mill and manage same with the right party; water power preferred. Address WANTED, care Journal.

WANTED—A COMPETENT MAN TO TAKE charge of the finishing room of a mill making fifteen tons daily of book papers. Address D. B. H., Paper Trade Journal Office.

WANTED—SALESMAN WHO THOROUGHLY understands the paper business to place product of mill making book, manillas and specialties. Address MORTON, care Journal.

A PROMINENT GERMAN IMPORT HOUSE WANTS LARGE QUANTITIES OF WOOD PULP, and invites offers f. o. b. Antwerp, Rotterdam and Hamburg. Address

Z. D., 1254,
Care of Haasenstein & Vogler, A. G.,
Köln-an-Rhein.
(Cologne on the Rhine).

WANTED A SECOND-HAND STACK OF seven chilled rolls, 84 inch face; state exact dimensions, with maker and price; also one second-hand Hill diagonal cutter; 42 inch knife preferred. Address, stating price and condition, LOCK BOX 786, Holyoke, Mass.

WANTED—TWO EXPERIENCED PAPER salesmen; one familiar with manilla papers and one with book and writings. Address GROVER, care of Paper Trade Journal.

WANTED—SOBER MACHINE TENDER FOR cylinder machine to run daytime only; one who understands manilla and hangings. Address, stating wages, &c., SOBER, care Journal.

WANTED—POSITION AS SUPERINTENDENT by a first-class paper maker; very best references. Address HUDSON, care of Paper Trade Journal.

SITUATIONS WANTED BY FIRST-CLASS superintendents, machine tenders and engineers; worked on all grades of paper; both slow and fast running machines; can furnish best references if required. Apply to EAGLE LODGE No. 1, Brotherhood of Paper Makers, Box 672, Holyoke, Mass.

SITUATION WANTED—BY A FIRST-CLASS engineer; well up on all grades of stock and colors; steady man, with good reference. Address A. M., care of Paper Trade Journal.

WANTED

By a thoroughly equipped general foundry and machine works, some specialty to manufacture in the machinery line; heavy machinery preferred; familiar with paper machinery. Address NATIONAL, care Paper Trade Journal.

SITUATION WANTED,

By young married man, as boss in color department; understands mixing colors for fine colored, white plated and chromo papers, enameled and glazed, ivories and satins for lithograph, bristols, boxboards and wedding cards; can give good reference. Apply to COLOR MIXER,
Post Office Box 818, Holyoke, Mass.

WANTED,

After November 1, 1894,

The Western Agency on Commission of several lines of Papers, by two energetic young men, each having wide acquaintance in the West, with good trade. Will not locate in Chicago. Correspondence solicited.

Address D. & K.,
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PAPER MILL MACHINERY FOR SALE. One 64 inch cylinder, first and second press; four iron dryers, 36×62 in. revolving reel, continuous cutter, ream cutter. One 2 screw all iron press, back line shafting. One 52 in. cylinder machine, three brass molds, first and second press, two rubber rolls, rubber couch, ten iron dryers, 28×50 in. reels, two stacks calenders, 3 ft. high and 5 ft. high, back shafting—all as in use; also Fourdrinier part and cutters, cheap for cash.

Address IMPORTER,
Care Paper Trade Journal.

FOR SALE—A 58 INCH RIGHT-HAND Findlay paper cutter; as good as new. ADAMS & CO., Chagrin Falls, Ohio.

FOR SALE—THE SENECA FALLS TISSUE Paper Mill, now running. Address H. W. KNIGHT, Seneca Falls, N. Y.

FOR SALE,

seven washing engines, 42×42 inch rolls; capacity 700 lbs. rags each, with washing cylinders and sand grates complete; the above can be seen running in our mill until about December 1; will sell low, as we are going to add seven new engines to take place of above. FAIRFIELD PAPER CO.,
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Hofmann's Treatise on Paper Making

Two second-hand copies in first-class condition will be sold at a sacrifice. Desire to dispose of same at once. Address

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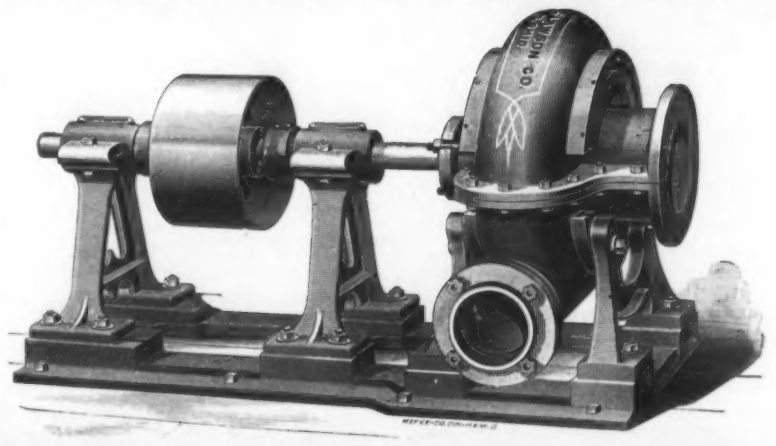

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Jordan Engines Refilled.

Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.

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MEDAL AWARDED AT WORLD'S FAIR FOR OUR SEAMLESS DRYER.

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A set of six 88 inch revolving reels, new, our make, with heavy frames, gears, tension wheels, endwise adjustment, driven by weighted friction, a power rotating attachment and a reel turning device.

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TO LEASE.

The Hanmer & Forbes Company's Manilla Mill.

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For Sale or Rent.

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NOTICE.

My attention having been called to the fact that certain parties are infringing certain Letters Patent granted to me, to wit: No. 212,866, dated March 4, 1879, covering a new form of carpet lining, and No. 235,698, dated December 21, 1880, covering the method of and apparatus for making the same, this is to notify all such persons, whether manufacturers or dealers, that any infringement of either of said patents will be prosecuted to the full extent of the law. MOSES NEWTON, Patentee.

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Two second-hand Jordans.
One Marshall Engine.
Two Rotaries, 6×20 ft.
Two Daniels Rag Cutters.
Two Revolving Paper Cutters.
All guaranteed in good condition; nearly new.

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Two fully equipped mills in first-class order for the manufacture of manilla and other paper; never failing water power; capacity of each three to five tons per day; 1,300 acres fine rolling land; brick dwelling; about thirty-six miles from Baltimore, Md.; will be sold; a bargain. For particulars address HENRY W. ROGERS,
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One 84 inch Fourdrinier part to paper machine complete, with Gould screen.

One 74 inch Fourdrinier machine complete, Gould screen; gun metal press rolls, 15x75 inches; eight iron dryers, 36x72 inches; stack of nine chilled rolls, 72 inch face; upright reel and cone pulley cutter; Bess slitters.

One Gould screen, eight plates, 10x36 inches.
One Gould screen, eight plates, 12x40 inches.
One Barber's suction.

One 70 inch machine complete, Gould screen, Fourdrinier wire, 70x33 inches; first and second presses; eight iron dryers, 36x65¼ inches; stack five chilled rolls, four 12 inches, one 16x64 inches face; upright reel, slitter and winder.

Two new 1,000 pound Holyoke Machine Co. beaters, wood tubs.

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Six beating engines, 36 inch roll, iron tubs.
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Send for catalogue of machinery, steam engines and boilers.

1,000 feet shafting, 2 to 6 inches diameter; 500 feet belting, 5 to 48 inches wide.

Parties wanting tools, stock or machinery used in a paper or pulp mill can find it here at a bargain.

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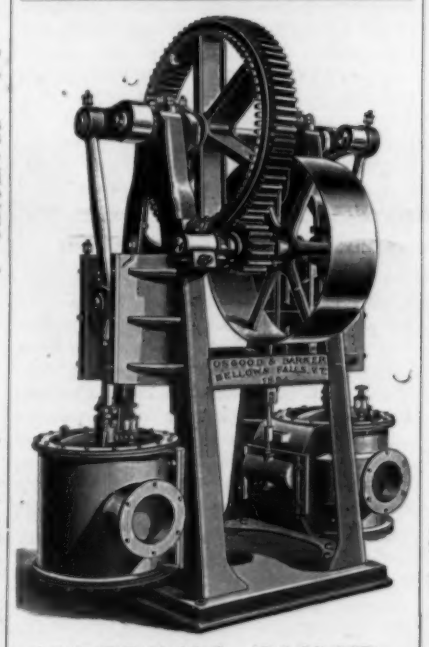

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FOR SULPHITE PLANTS.

Fourdrinier and Cylinder Paper Machines,

With one, two, three or four stacks of dryers.

Upright Reels, with two or three Drums,
Reel Stacks and Revolving Reels,
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For buffing ends of the rolls.

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For all kinds of Paper.

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Revolving Paper Cutters,
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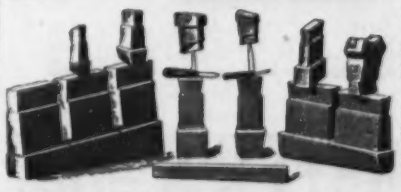

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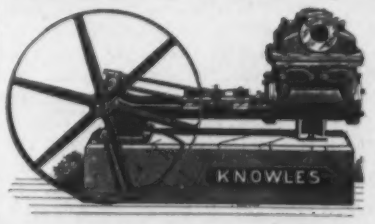

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PUMPS for

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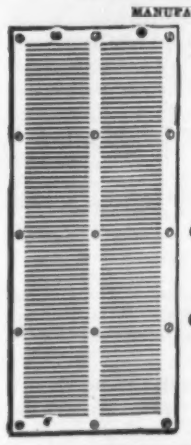

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REPAIRING OLD SCREEN PLATES A SPECIALTY.

All Kinds of SCREEN PLATE WORK

OLD PLATES, when "Entirely Worn Out," OVERLAID.

Write to the WESTERN SCREEN PLATE WORKS, APPLETON, WIS.,

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Absolutely no leakage from any source; no dripping or sweating; fire-proof; ventilating.

THE CLOVER LEAF VENTILATOR FOR MILLS, FACTORIES AND DYE HOUSES.

Made of galvanized iron or copper. Strong upward draft; exhausts foul air, odors, gases, steam, etc. Perfectly storm-proof. Send for illustrated circular.

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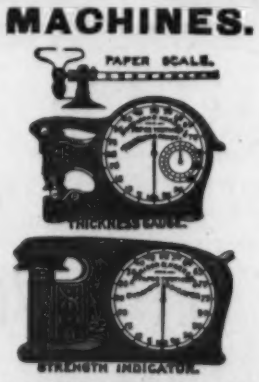

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All persons are liable to prosecution who make buy or use Paper Testers that confine and break paper within its edges, as my Patents cover that method.

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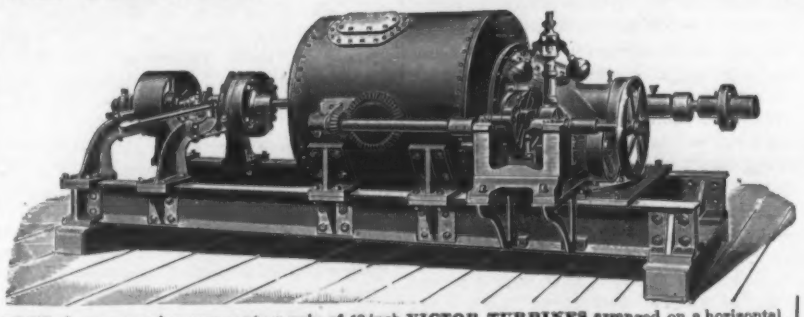
UPRIGHT or HORIZONTAL.

In use in a large number of best Paper and Pulp Mills in this and other Countries.



THE above engraving represents a pair of 12 inch VICTOR TURBINES arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines, either single or in pairs, on horizontal shafts, and where the situation admits of their use we recommend them.

CYLINDER OR REGISTER GATE.

INSURING HIGHEST PERCENTAGE OF USEFUL EFFECT AT

FULL AND PARTIAL GATE.

TESTS IN HOLYOKE FLUME.

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT
15 inch	18.06	30.17	.8682
17½ inch	17.96	36.35	.8980
20 inch	18.21	49.09	.8582
25 inch	17.90	66.62	.8584
30 inch	11.65	52.54	.8676
35 inch	17.29	133.19	.8497
40 inch	16.49	148.93	.8253
48 inch	15.51	179.29	.8202

Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

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THE VICTOR WHEEL is particularly adapted to setting on HORIZONTAL SHAFT, DISPENSING ENTIRELY WITH GEARS.

STATE YOUR REQUIREMENTS AND SEND FOR CATALOGUE TO

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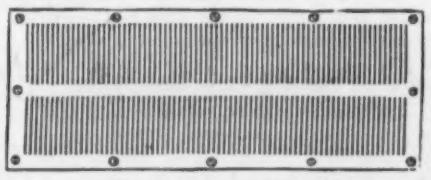
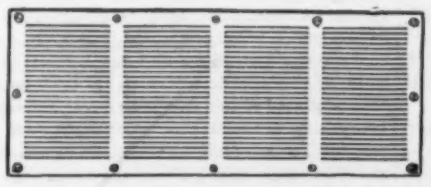
ANNANDALE Screen Plate Co., PATERSON, N. J.





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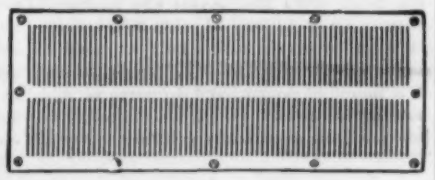

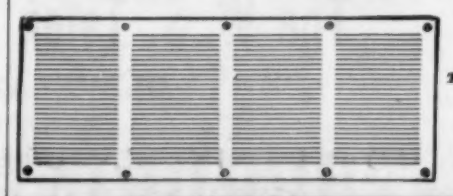

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All Work Warranted.

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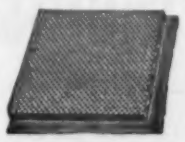

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Asbestos Prepared Roofings.

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Chicago, Ill. H. F. WATSON COMPANY, Erie, Pa.

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MANUFACTURER OF ALL STYLES OF

COATING MACHINERY FOR LITHOGRAPH, LABEL, FANCY, GLAZED, BOOK AND SAND PAPERS.

Also Cardboard and Paper Hangings Machinery. Hilbers, Stalb and Waldron Patent Hanging Up Machines. Patent Power Reeling Machines for Coated Papers and Cardboard. Embossing Machines, Paper Rolls, Polishing Machines, &c.

Machinery is universally used by the manufacturers of above goods in the United States and Canada.

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ALL STANDARD SIZES.

GREEN'S PATENT FUEL ECONOMIZER FOR STEAM BOILERS.

ADVANTAGES:

High temperature of feed water, in many cases up to 30° degrees, thereby effecting a GREAT SAVING IN COAL.

Increased heating surface, thereby increasing capacity of the boilers.

A large volume of water always in reserve at the evaporation point, ready for immediate delivery to the boilers.

Acting as an efficient water purifier and keeping the heating surface of the boilers clean, the result being FUEL SAVED.

Can be applied to ANY TYPE of boilers without stoppage of works.

Only Medal Awarded for Flue Heater at the Columbian Exposition.

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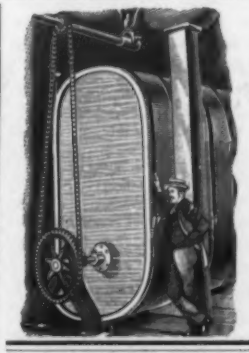

THE SAVAGE PERFECTING STUFF CHEST.

Fits into a narrow space and requires but little power to operate.

It has a double agitating motion, moving the stuff in different directions, which prevents "floating."

It empties itself clean; no waste of stuff and protects from dirt.

Quantity of stuff in chest always shown by indicator.

In writing give space in height, length and breadth if pressed for room; also the amount of stock in dry paper that the chest is wanted to hold.

PATENTED AND MANUFACTURED BY

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FOSTER & BROWN, SACCARAPPA, MAINE.

MACHINISTS AND IRON FOUNDERS.

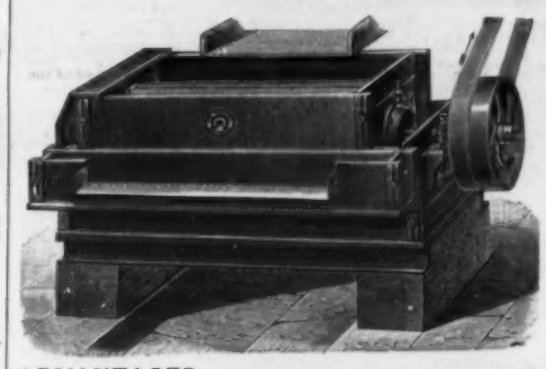
SPECIALTIES:

Improved Paper-Coating Machines; Hanging Machines and Power Reels for Coated Paper; the Merrill-Foster Noiseless Pulp Screens; Paper Slitting and Trimming Machines; Hardened and Ground Slitters; Automatic Elevators.

BUILT UNDER OUR OWN SUPERVISION.

THE "WANDEL" Rotary Sulphite Pulp Strainer,

PATENTED IN THE UNITED STATES AND CANADA,



And Now Used in the Following Mills:

33	Pulp	Mills in	Germany,
9	"	"	Austria,
5	"	"	Switzerland,
7	"	"	France,
1	"	"	Italy,
1	"	"	Spain,
2	"	"	England,
13	"	"	Norway and Sweden,
3	"	"	Denmark,
1	"	"	Finland,
6	"	"	Russia.

ADVANTAGES: Largest straining surface, combined with small requirement of room. Unsurpassed straining capacity. Absolutely reliable and noiseless work. No contact of the pulp with iron parts. Practical construction. Simple, durable, perfect. Price very moderate.

THE "WANDEL" ROTARY SULPHITE PULP STRAINER

Is the only system now adopted by the most important Sulphite Fibre Mills of Europe.

FOR FURTHER PARTICULARS APPLY TO

CHR. WANDEL, Reutlingen, Germany,

—OR—

GEO. HAMILTON, No. 74 WALL STREET, NEW YORK.

CYRUS CURRIER & SONS, NEWARK, N. J.,

Paper Machinery.

KINGSLAND BEATING ENGINE.

IMPROVED MACHINES FOR MAKING SQUARE PAPER BAGS.

By our PATENT methods of obtaining slack paper, severing bag lengths and applying paste, we are enabled to make perfect bags at a speed not attained by any other machine on the market. For full information and prices address

The Diamond Paper Bag Co., *WILMINGTON, DEL., U. S. A.*

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Price, Two Dollars a Copy, POSTAGE PREPAID

THIS pioneer and standard book, now in the twentieth year of its publication, enjoys the confidence of every person in the trades which it represents. It is carefully and thoroughly compiled and edited each year. After one edition has been printed the type is distributed, and when a new edition is undertaken the data, item by item, are obtained and put into type especially for it, thus making the work reliable. Altogether about 475 pages set forth facts which must be invaluable to all engaged in the making and selling of Paper and Stationery, as well as all others in the allied branches of the trades.

It enables manufacturers, buyers and sellers to come together for mutual benefit.

The book includes a list of Paper Makers in the United States, Canada and Mexico; Wholesale and Retail Stationers, Paper Dealers; Leading Printers, Lithographers, Book Publishers, Bookbinders, Wall Paper Printers; Blank Book, Paper Bag, Paper Box, Envelope, Pad and Tablet Manufacturers; Railroad Buyers, &c., in the United States.

Orders filled according to date of receipt. Address

HOWARD LOCKWOOD & CO., 126 & 128 Duane St., New York.

Manufacturing News.

EASTERN STATES.

The Farley Paper Company, Farley, Mass., is about to build another pulp mill.

The George W. Wheelwright Paper Company will place a Lowden "Combined Exhaust and Live Steam" regulator on its No. 2 machine in its mill at Wheelwright, Mass. This is the third order received for Lowden regulators from this company.

During the past month the Lawrence Machine Company has shipped its centrifugal pumps to the following named parties: Wm. Mann Company, Lambertville, N. J.; Farwell Worsted Mills, Pawtucket, R. I.; McEwan Brothers, Whippany, N. J.; O. N. Evans Construction Company, New York, N. Y.; Barbour Flax Spinning Company, Paterson, N. J.; New York and Boston Dye Woods Company, Brooklyn, N. Y.; National and Providence Worsted Mills, Providence, R. I.; Perrin, Seamans & Co., Boston, Mass.; Herbert Tate, Brunswick, Ga.; Gibbs Electric Company, Milwaukee, Wis.; Merrimac Chemical Company, South Wilmington, Mass.; Charleston, S. C., Mining and Manufacturing Company, Fetteressa, S. C.; Forest Paper Company, Yarmouthville, Me., and the Ingersoll-Sargent Drill Company, Cleveland, Ohio.

The Falulah Paper Company, Fitchburg, Mass., will put in another steam engine; it will be of 400 horse power.

The Nashua Paper Company, East Pepperell, Mass., is refitting one of its mills which has been idle for two years, and will put in new machinery.

The construction of the large, new pulp mill at Otis Falls, Me., has been contracted for and will soon be begun.

MIDDLE STATES.

The mill of the Hudson River Pulp and Paper Company, Palmer's Falls, N. Y., is being enlarged.

The Jessup & Moore Paper Company, Wilmington, Del., has recovered $3,000 damages from the Philadelphia and Baltimore Railroad Company. The suit was brought on account of the pollution of two ponds on the paper company's property.

The mill at Fayetteville, N. Y., which has been idle, has been started up, running on tissue and medium weight manillas, by the Fayetteville Paper Company.

John Schulte, formerly of Cochecton, N. Y., has erected and will operate a paper box factory at Lestershire, N. Y.

WESTERN STATES.

An effort is being made to arrange for the building of a sulphite fibre mill at Grand Rapids, Mich.

The new paper mill of the Willamette Pulp and Paper Company, Oregon City, Ore., is about completed. The new paper machine will be operated by electric power, which the company will generate from its own plant.

A company of local capitalists at Anderson, Ind., is being formed to purchase the Anderson Paper Mill, which is to be sold by the sheriff on the first of the coming month. In case they get control of it the capacity will be doubled and it will be put into full operation at once. The plant is one of the finest in the Western States and is capable of turning out a good deal better quality of paper than it has in the past.

The mill at Everett, Wash., has shipped within the past two or three weeks 140 tons of paper to Australia.

The mill at Miamisburgh, Ohio, burned some time ago, is to be rebuilt at once.

The American Straw Board Company has started up its mill at Kokomo, Ind., with a reduced force at reduced wages.

The strawboard mill at Kenton, Ohio, has been idle for many months. There is now some talk of the mill starting up again to manufacture a better grade of strawboard than it had heretofore turned out. A serious difficulty has been encountered, which may cause the mill to be abandoned. It is said that the sewers which empty into the river above the mill contaminate the water so that it is unfit for use. A project is on foot to lay a pipe line from the mill up the river to a point above the mouth of the sewer, and thus carry pure water to the mill. The owners want the city to bear the expense, which it is estimated would be several hundred dollars, and say that if the city will do this they will at once begin operations on an extensive scale. Unless an arrangement of this kind can be made, the plant will in all probability be abandoned and the machinery moved elsewhere.

The Wabash Paper Company, Wabash, Ind., has given notice that it will immediately start up its lithograph department, which has been closed for a year and more.

SOUTHERN STATES.

The Clarksville Paper Mill, Louisiana, Mo., which has been shut down for several months, was entered by burglars recently and upward of $1,500 worth of brass fixtures and lead pipe was stolen.

The proposed paper mill at Carrollton, Mo., has not yet been determined on. It is said, however, that the chances of removing the paper mill from Wheeling, Mo., to Carrollton are good.

The Tennessee Fibre Company, Memphis, Tenn., reports excellent results in the manufacture of paper stock from cotton seed hulls by its recently invented and patented process. It has a large and growing trade in cotton hull fibre, a stock which is being used successfully in all grades of paper, from news to fine writings. The company is now putting in machinery to increase its plant to a capacity of from 15 to 20 tons daily, to meet the growing demands for this fibre.

The Great Kanawha Falls Water Power, Electrical, Manufacturing and Land Co., has been formed at Charleston, W. Va., with a capital of $2,000,000, to build an immense electrical plant at the Great Kanawha Falls. The natural power of the falls will be utilized and transmitted to mines, factories and railroads within a radius of 20 or 30 miles. It is proposed also to furnish towns with street and commercial lighting, and to place trolley wires over the channel of the river for the use of towboats conveying coal from the mines. The principal stockholders are: Charles M. Reed, of Baltimore, Md.; A. McClintock, of Philadelphia, and A. O. Patton, W. W. Tompkins, W. F. Scott, T. F. Snyder and M. Levi, of Charleston.

A wood pulp board mill is to be built at East Chattanooga, Tenn. It is reported that the process to be used in manufacture will combine the mechanical as well as the chemical principle of making wood pulp. The material to be used will be slabs and edgings from basswood, poplar and other similar woods.

CANADA.

It is stated that preparations are being made to start construction work on the Canadian tunnel of the Cataract Construction Company at Niagara Falls.

An Ottawa paper remarks that another evidence of the good which the Ottawa, Arnprior and Parry Sound Railway is doing to the country through which it passes will be found in the establishment of a large pulp mill shortly to be built in the middle of a densely wooded country some 35 miles from the present terminus of the O. A. & P. S. The promoters of this scheme are said to be the firm now engaged in the building of a large steam saw mill in a place through which the line will pass next year, the St. Anthony Lumber Company, of Minneapolis. There is also some talk of establishing another saw mill farther up the line of the O. A. & P. S. The St. Anthony Company's mill will not be ready to begin cutting before the month of June next, as great difficulty is experienced in conveying the necessary supplies through almost impassable bush roads a distance of over 30 miles.

The Circuit Court of Baltimore, Md., has been petitioned to appoint a receiver for the Morris Publishing Company, publisher of the *Prohibition Advocate*.

General Notes.

A receiver has been appointed for the *Daily News* Company, Cincinnati, Ohio, organized and incorporated under the name of "The Printers' Publishing Company."

Paper manufacturers wanting a steam engineer might correspond with H. W. Luther, whose address will be found in the "Want" column. Mr. Luther is an old engineer of experience, and has many strong testimonials regarding his qualifications.

Charles L. Parmelee has been appointed receiver for the St. Lawrence Paper Company, Dexter, N. Y. The company was incorporated in October, 1889, with a capital stock of $60,000, and three months ago claimed assets, $158,000; liabilities, $84,000. Henry Bininger was president.

The great water power reservoir in Big Cottonwood Cañon, near Elk Lake City, Utah, is about completed. The company which is engineering the undertaking will be ready to make good their offer of electric power and lights to the city and to the street car lines at greatly reduced rates.

A good way to paint new wirework that is exposed to the weather is to first give it two coats of boiled oil, taking care to rub it well into the meshes, and allowing each coat to thoroughly dry. Then give two coats of good oil color, a week apart. If good materials are applied and the work is properly done this will keep the wirework from rusting.

A fireproof and waterproof substitute for paint, for use in boiler and engine rooms, consists of 6 quarts of freshly slaked lime, well sifted, to which are added 1 quart of rock salt and 1 gallon of water, the mixture being then well boiled and skimmed clean. To 5 gallons of this mixture are added a pound of alum, half a pound of copperas, stirred in slowly, three-quarters of a pound of potash, and 4 quarts of fine sand or hardwood ashes, well sifted. To this may be added any coloring material desired. It is said to be as durable as slate and to be especially applicable to brickwork and similar surfaces.

A good preparation for preserving tools from rusting is made by slowly melting together 6 or 8 parts of lard to 1 of resin, stirring until cool. This remains semi-fluid, ready for use, the resin preventing rancidity and supplying an air-tight film. Rubbed on a bright surface ever so thinly, it protects and preserves the polish effectually, and it can be wiped off nearly clean if desired, as from a knife blade, or it may be thinned with coal oil or benzine.

An electrical device has been invented in France to produce copies of existing sculptures automatically. It consists of a peculiarly constructed instrument, not unlike a pantagraph. As a pencil is guided over the contour of the sculpture to be copied, a corresponding revolving cutter, operated by electricity, chisels the stone block. The figure thus produced is not perfect in the finer details, but great economy of labor is secured for the rougher work, and the invention is chiefly valuable in the repetition of sacred or monumental figures, for which there is great demand.

The Goulds Manufacturing Company, manufacturer of pumps and hydraulic machinery, Seneca Falls, N. Y., has issued a special addendum to its regular catalogue in the shape of a twenty-page pamphlet, containing illustrations and descriptions of most of the recent additions to its lines. The products of this company cover almost everything in the line of pumping apparatus, from a well pump to the machine which will discharge 3,900 gallons per hour. Between these extremes are various kinds of force pumps, plumbers' pumps, vacuum pumps, fire engine, power, windmill, irrigation, railroad, sewer and other pumps, all of which take a high rank in the trade, not only for practical usefulness, strength, durability, &c., but for the excellent character of the workmanship put into them and their attractive finish. The company will issue its general catalogue and price list early in January, and desires all wanting copies to forward names and addresses.

Webb & Owings, booksellers and stationers, Birmingham, Ala., have gone into the hands of a receiver. John M. Webb has issued a circular stating that there have been dissensions in the firm, that there are three times as many assets as liabilities, that the receiver was appointed at the instance of his partner, W. H. Owings, who owns a minority interest, and that there is no reason why any creditor should lose anything or experience any delay in getting what is due him.

Accidents.

Louis Able, an employee of the Badger Paper Company, Kaukauna, Wis., had his hand badly squeezed between the calender rolls on November 7.

John Shepard, a carpenter in the employ of the Collins Paper Company, Wilbraham, Mass., was instantly killed at the mill on November 5. He was putting on a belt when he slipped and was dragged through the gear, breaking his neck. He leaves a widow and three children.

Patrick McMahon, an employee of the Walloomsac Paper Company, Walloomsac, N. Y., narrowly escaped a shocking death on November 2. He was standing in a stooping position gazing down the elevator pit when the descending elevator caught and temporarily pinioned him. He escaped with serious bruises and was removed to his home. That his neck was not broken seems marvelous.

J. W. McGarrett, superintendent of the color department of the Pepperell Card and Paper Company, East Pepperell, Mass., met with a severe accident on October 30, by falling about 10 feet, striking his head and chest, receiving a severe scalp wound and breaking three ribs. Mr. McGarrett was walking on a platform in the rear of the mill in the dark, and stepping over the edge fell to the ground below.

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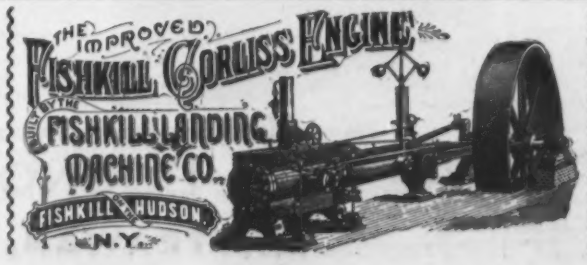

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Steam Engine Cylinders.

In a paper read at the meeting of the British Association, Bryan Donkin, M. I. C. E., called attention to the important question of the most suitable temperature of cylinder walls to obtain the maximum economy by reducing condensation in steam cylinders to a minimum. To diminish condensation his experiments prove that it is essential to reduce the difference of temperature between the incoming steam and the cylinder walls. In most cases the cylinder walls are much colder than the steam, and often one-half the weight of steam is condensed during admission. Many experiments show that the nearer the temperature of the cylinder wall is to that of the entering steam the greater is the economy. With walls 40° to 60° Fahr. colder than the steam (as is often the case) the consumption is greatly increased, owing to the large amount of condensation.

On the other hand, the cylinder metal can be made too hot and heat wasted at exhaust. This has also been experimentally proved by the author. The best results in steam economy have been obtained when the temperature of the internal surfaces is a little higher than that of the entering steam. Cylinder walls can be heated in various ways. The most usual is to raise their temperature and that of the covers by means of boiler steam introduced into the jacket spaces. Another method, and one used a good deal on the Continent, is to work with superheated steam. This steam has been employed in some cases with advantage in the jackets as well as in the cylinders. Smoke jackets have generally proved a failure. When the jacket is connected to a condenser having a good vacuum, economy of steam is also obtained, but not so much as with steam in the jackets. To secure the maximum economy also, it is important not only to diminish the volume of the clearance spaces, but especially to reduce as much as possible the area of the clearance boundary surfaces. In this way the weight of iron heated and cooled so many degrees per stroke can be materially diminished.

The character of the internal surfaces, whether rough from the sand or turned, and their position horizontal or vertical, have also some influence on the transmission of heat and condensation of steam, as verified by recent trials. Experiments have also shown that the cylinder wall in any working steam engine is divided thermally into two parts; the outer portion remains at a constant temperature, and the inner or periodic portion is heated with each steam and cooled with each exhaust stroke. The relative proportion of these two parts, or the depth to which the heat penetrates into the metal, depends largely upon the speed of the engine and on the temperature of the cylinder relatively to that of the entering steam.

In a non-jacketed engine, with 1 inch cylinder walls, working at thirty-five revolutions per minute, the depth to which the heat penetrates and fluctuates per stroke is at least about 8 to 9 millimetres from the internal surface. The depth of heat penetration for the same speed is much less with hot than with cold walls; a less weight of metal is heated per stroke, and condensation is found to be much reduced. The author gives some of the results of eighty experiments on a small vertical engine with cylinder 6 inches diameter and 8 inches stroke, made expressly for experimental research. The details are to be published in the "proceedings" of the Institution of Mechanical Engineers. The engine was worked with very different temperatures of walls, and many tests were made, condensing and non-condensing, jacketed and non-jacketed, single and double acting, at different expansions, and with both saturated and superheated steam in the cylinder and jackets. Care was taken in these experiments only to vary one set of conditions at a time. Results of two experiments are added, one with hot and the other with cold walls, or one with steam and the other with air in the jackets. Both tests were made condensing, double acting, with 50 pound steam pressure, 3-16ths cut-off, and at a speed of 220 revolutions per minute. The walls were some 30° Fahr. hotter with than without steam in the jackets; the steam consumption per indicated horse power was reduced from 41¼ to 28⅓ pounds, or about 31 per cent.; the thermal efficiency was increased from 5.7 to 8.1 per cent., or 40 per cent.; and the rate of initial condensation was reduced from 460 to 217 pounds per square foot per hour, or by more than one-half.

The percentage of steam present in the mixture during expansion was also increased by about 50 per cent. Throughout these experiments an increase of economy with the hotter walls was always verified; the thermal efficiency was higher, the initial condensation less and the percentage of steam present during expansion always increased. The tests on this engine point to the practical conclusion that the range of steam temperature in the cylinder per stroke has much less effect on the steam consumption than the temperature of the walls. The paper may be shortly summarized thus: The most uneconomical results were always obtained with the cylinder walls colder than the entering steam. Under these conditions considerable initial condensation was produced, drops of all sizes up to 3 mm. diameter being formed and running down the cold surfaces. The heat also penetrated into the colder walls to a considerable depth, a certain quantity being given up by the steam at every stroke, to raise the temperature of the internal surfaces after exposure to the condenser temperatnre. Both at cut-off and release there was a great deal of water in the cylinder compared with the weight of steam present.

On the other hand, the most economical results were always obtained when the cylinder walls were at about the same temperature as that of the entering steam. Under these conditions the rate of initial condensation was very much lower, and the drops of water formed much smaller in size. The heat penetration into the walls was also much less, a smaller amount of steam sufficing to heat the internal surfaces after being cooled by the condenser. The percentage of steam present in the mixture, at cut-off and release, was also very much increased. If engineers and others using steam engines wish to work economically and with smaller boilers they must arrange to keep their boilers and covers as hot as the steam entering the cylinder; otherwise the cylinder becomes unintentionally an efficient condenser, with a large area of cooling surface. Properly applied steam jackets are economical, because they raise the temperature of the walls touched by the steam. Those who cannot steam jacket the whole cylinder should at least jacket the two covers, which are the most important surfaces. Well arranged jackets with properly sized pipes for entering steam and exit water, without places for air to collect, are an excellent investment, and pay a good interest on the small additional cost.—*Manufacturers' Gazette.*

Rules for Calculating the Speed of Pulleys.

Rule 1—To find the size of driving pulley multiply the diameter of the driven by the number of revolutions it should make, and divide the product by the revolutions of the driver. The quotient will be the size of the driver.

Rule 2—The diameter and revolutions of the driver being given, to find the diameter of the driven that shall make a given number of revolutions, multiply the diameter of the driver by its number of revolutions, and divide the product by the number of revolutions of the driven. The quotient will be the size of the driven.

Rule 3—To find the number of revolutions of the driven pulley, multiply the diameter of the driver by its number of revolutions, and divide by the diameter of the driven. The quotient will be the number of revolutions of the driven.

The following examples will assist in determining diameters and speeds of pulleys:

EXAMPLES.

Example 3—A 30 inch pulley, making 180 revolutions per minute, drives a countershaft with a 12 inch pulley. What is the speed of the latter?

$180 \times 30 \div 12 = 450$ revolutions per minute.

Example 2—A countershaft is to make 450 revolutions per minute, driven by a 30 inch pulley making 180 revolutions per minute. What will be the diameter of countershaft pulley?

$180 \times 30 \div 450 = 12$ inches.

Example 1—What will be the diameter of a pulley making 180 revolutions per minute, to drive a 12 inch pulley 450 revolutions per minute?

$450 \times 12 \div 180 = 30$ inches.

In calculating toothed gears, substitute the numbers of teeth for the diameters, as above.

Abolition of the Smoke Nuisance.

A long step toward the abolition of coal smoke from manufactories has been made in Toledo, Ohio. Homer T. Yaryan, proprietor of the local hot water and electric light plant, has demonstrated that not only can smoke be suppressed, but at the same time a saving of 20 per cent. on fuel bills can be accomplished. The latter is not an inconsiderable item to those whose annual fuel bills are very large. This is accomplished at the Yaryan plant by feeding the fire from underneath instead of from the top, as has been the custom ever since coal became a fuel.

A mechanical stoker introduces a uniform quantity of fuel at regular intervals under the boiler, and the combustion thoroughly consumes all of the gases and smoke from the green coal as it passes through the bed of incandescent coke above it. By the use of this device Mr. Yaryan uses practically free fuel. The coal with which he fires his boilers is the poorest kind of Hocking Valley slack, and is obtained for the freight and the nominal charge of 10 cents per ton for loading at the mines. This slack cannot be burned in an ordinary furnace fired by hand, and a shovelful thrown in with other coal will result in a thick, black cloud of smoke liberally filled with coarse soot.

Secretary Jermain, of the old Manufacturers' Association, which has at different periods paid some attention to this smoke matter, has inspected the Yaryan system and remarks as follows: "In the future the problem would not be, can the manufacturers afford to suppress smoke, but can they afford to allow volumes of smoke and heat units to escape from their stacks? Smoke reform has always been regarded by perhaps the majority as a radical movement conducted chiefly in the interest of the patentees of smoke consumers. It has been said, and with truth, that in cities where there has been legislation against smoke the junk yards and scrap iron piles are filled with smoke consumers. There are none, however, who would not prefer a clear atmosphere to one filled with coal smoke, and when it has been demonstrated that this result can be accomplished at a considerable saving in fuel bills, as it is being demonstrated daily by Mr. Yaryan, there should be no hesitancy in adopting such improved methods as will insure to the user the best results from his fuel and to the public pure and unpolluted air."—*Manufacturers' Gazette.*

The Interior Friction of Oils.

Petroff, who has occupied himself very extensively with the examination of lubricants, has investigated the interior friction of oils by means of an apparatus invented by himself, and has given his results in tabular form and graphically by a series of curves. According to his results the degree of transparency of lubricants, the refining process, viscosity, flash point and fire point, give no basis for estimating the degree of interior friction, though all are of importance.

If two oils which at the same temperature possess different interior frictions be mixed, the mixed product will yield a characteristic curve corresponding to that of an oil the qualities of which lie between those of the two components. Consequently the excessive friction of any thick lubricant may be reduced by mixing with it small proportions of solar oil, pyro-naphtha or kerosene, or any oil possessing low interior friction. But this addition can be useful only when the added product does not separate to any great extent. The addition of such light oils can of course be easily detected through the flash point and fire point. The addition of various resinous materials increases friction in the machinery and in the lubricant itself, while these products have also an injurious chemical effect upon the metallic surfaces subjected to friction. It was also frequently observed that samples of the same oil that were received in the factory at different times did not yield the same characteristic curve, though filling all requirements. This fact is naturally important to consumers on economic grounds.—*Scientific American.*

Thick Fires.

It is the prevailing opinion with some that it is necessary when a boiler is worked to a high rate of capacity to maintain correspondingly heavy fires. It is argued that thin fires are well enough for slow rates of combustion, but as the call for steam increases it must be met by an increased thickness in the bed of coal on the grate. Where heavy fires are carried it is a common thing for the fireman to shovel in all the coal that he can conveniently supply, going so far as to almost fill the opening at the firedoor, leaving little if any room for a future supply until that already in has been pushed back to make room for more.

The ordinary fireman is apt to favor this method, for the reason that he can introduce large quantities at a firing, and afterward he is not obliged to give the fires much attention for perhaps an hour's time, when he will again fill the furnace full in the same manner as before. This method of firing with most of the high-class bituminous coals in use in the Eastern States requires from time to time the use of the slice bar for breaking up the bed of coal.

It has always seemed to the writer that whatever necessity there may be according to the popular idea for carrying heavy fires, in the matter of the amount of labor involved it is in reality more laborious for the fireman than it would be if the fires are kept comparatively thin and small quantities of coal supplied at each firing. As an explanation, however, of the favor which this method receives, it is probable that the class of labor which is generally employed considers the muscular effort required much less of a task than the more frequent and careful attention which is needed when the fires are kept at medium thickness.

As regards a comparison between thick and thin fires the fact is that more capacity can be obtained from a boiler when a fire of medium thickness is carried and proper attention given to its condition than can be realized by any system of management when the fires are exceedingly heavy, and advocates of thick fires, who take the ground that they are a necessity where boilers are forced, are entirely mistaken. As to the economy of the two, some persons maintain that heavy fires give the most economical results, but this is questionable.

Valuable information on the subject has recently been brought out by the results of two evaporative tests, which we give below. They were made on a 72 inch return tubular boiler having 100 3½ inch tubes 17 feet in length. The heating surface amounted to 1,642 square feet and the grate surface to 36 square feet, the ratio of the two being 45.6 to 1. On the thick fire test the depth of the coal on the grate varied from 8 to 20 inches, being heaviest at the rear end and lightest at the front end. On the thin fire test the depth was maintained uniformly at about 6 inches. The coal was New River semi-bituminous coal. The difference in the results as appears from the figures is an increased evaporation due to thin fires, amounting to 15.5 per cent.

Conditions as to thickness of fires.	Thick fires.	Thin fires.
Average boiler pressure.....lbs.	131.6	130.4
" temp. feed water.....deg.	39.6	43.5
" temp. flue gases.....	484.	487.
" draft suction.....ins.	.17	.18
Per cent. moisture steam....pr. ct.	.90	....
Coal per H. P. sq. ft. grate....lbs.	13.72	12.
Per cent. ashes, clinkers....pr. ct.	5.1	5.7
H. P. developed on basis 30 lbs., from 100 at 70.....H. P.	143.3	144.4
Water evap. per lb. coal.....lbs.	8 517	9.457
Equivalent evaporation per lb. of combustible from and at 212°....	10.986	12 234

—*Engineering Record.*

Legal Decisions.

[SPECIALLY REPORTED FOR THE PAPER TRADE JOURNAL.]

Evidence to Establish Prior Use.—The defense of prior use and sale must be established beyond a reasonable doubt, and a patent will not be overthrown when the evidence is so uncertain, conflicting and unreliable that it is impossible to say which of the rival devices first saw the light. The fact that one's machine may be an improvement on the patent, and has introduced some novelties, does not avoid infringement, when the principal features of complainant's invention have been appropriated.—*Simmons v. Standard Oil Company of New York (Circuit Court, N. D. New York). 62 Fed. Rep. 928 (81).*

Taxation of Imported Goods.—Imported goods in the importer's possession are not part of the property in the State subject to taxation. While they remain in the original package, the importer owes no tax upon them. An article imported continues to be a part of the foreign commerce of the country while in the hands of the importer for sale in the original package. The authority to import carries with it the right to sell the articles in the original package. When it has passed into the hands of a purchaser it is no longer an import and is subject to taxation like any other property.—*State v. Board of Assessors (Supreme Court of Louisiana). 15 So. Rep. 10 (117).*

Sale of Property by Resident Partner.—A resident managing partner, who is charged with the duty of winding up the partnership affairs and selling its property, is the agent and trustee of his non-resident co-partner; and it is a breach of trust for him to become interested as a purchaser of such property, either alone or with others, without his partner's knowledge, or to make profits out of the property at his partner's expense, and by so doing he renders himself liable to account for the full value of the property at the time of the sale.—*Gunn v. Black (Circuit Court of Appeals, Eighth Circuit). 60 Fed. Rep. 151 (97).*

Liability of Employer for Failure to Make Repairs.—It is a well settled rule that if a servant who has knowledge of the defects in the instrumentalities furnished for his use, or in machinery about which he is employed, gives notice to the master, who thereupon promises that the defects shall be remedied, the servant may recover for an injury caused from such defect, at least where the master requested or induced the servant to continue in the service, and the injury occurred within the time at which the defects were promised to be remedied, and where the instrumentality or machinery was not so imminently and immediately dangerous that a man of ordinary prudence would have refused longer to use or work about it. Under such circumstances the risk attendant upon the use of instrumentalities or machinery known by the servant to be dangerously defective is shifted upon the master, he assuming the risk previously borne by the servant. There can be no question that when a master has expressly promised to repair or remedy a defect the servant can recover for an injury caused thereby within such period of time after the promise as would be reasonably allowed for its performance, or within any period which would not preclude all reasonable expectation that the promise might be kept.—*Rothenberger v. Northern Consolidated Milling Company (Supreme Court of Minnesota). 59 N. W. Rep. 531 (222).*

When a Bank Becomes a Trustee of the Depositor.—Upon the deposit in a city bank of funds for transmission to the credit of a country bank, for the use of the depositor, the city bank becomes a trustee of the depositor; and where the country bank, by reason of its failure before the deposit was made, becomes unable to receive the deposit, the city bank is liable to the depositor for the amount of the deposit. The fact that the city bank deposited the money with another city bank, which was not the correspondent of the country bank, does not exempt the former from such liability, where the depositor was unacquainted with the custom of the bank in making such deposit, and did not consent thereto. Nor will the city bank in which the money was finally deposited be liable therefor, at the suit of the depositor, where the money was left with it with the instructions to credit it to the country bank generally, without any information that it was to be credited to that bank as the money of the depositor.—*Union Stock Yards National Bank v. Dumond. (Supreme Court of Illinois) 37 N. E. Rep. 862 (191).*

Participation Not a Partnership.—The Supreme Court of New York in a recent decision held that a contract between two or more partners and a third person, with the knowledge and assent of the other partners, by which the third person is to share in the profits and losses in the firm business of the partner with whom he contracts, does not constitute such a participation in the profits as will make the third person a partner or liable for partnership debts. The ground upon which that decision was based seems to be that participation in the profits of the business does not, in all cases, make the participant a partner as to third persons. To have that effect the participation must be in the profits, as such, under circumstances which give him a proprietory right, as principal trader, in such profits before division. In a case where it appeared that the party sought to be charged as partner had refused to become a partner, although his refusal had no connection with the knowledge of the liability which he would incur to creditors by becoming a partner, and that it was arranged between the parties that he should take a share of one partner's interest; and the only agreement made, so far as the party sought to be charged as a partner was concerned, was the agreement between him and one of the partners. The business of the firm did not require the contribution of capital, and none was contributed by any of the partners. The party sought to be charged aided the firm by purchases and consignments of merchandise to the firm for sale, but took no part in the management of the business. Upon these facts the court held that he was not a partner, either as to creditors or between himself and the other parties in interest.—*Van Tassel v. Williams, 27 N. Y. S. Rep. 1069 (294).*

Risks of Employment.—Assuming the risks of an employment by a servant while in the service of the master is founded upon an essentially different principle from incurring an injury through contributory negligence. The servant may be debarred from a recovery against the master when he voluntarily assumes the risk, but this is not identical with the principle on which the doctrine of contributory negligence rests. One does not voluntarily assume a risk, within the meaning of the rule that debars a recovery when he merely knows there is some danger, without appreciating the danger. Mere knowledge of a danger will not preclude a servant from recovering unless he appreciates the risk. It is the duty of the master to provide suitable instruments with which, and a proper place where, the servant may perform his work, subject to such risks as are necessarily incident to the business. But a servant of sufficient age and intelligence to understand the nature of the risk to which he is exposed may waive this obligation, which is due from the master, or may dispense with it altogether. Having full knowledge and appreciation of the dangers to which he is exposed, and consenting to serve in the way and manner in which the business is conducted, he has no legal ground of complaint, even if reasonable precautions have been neglected by the master, and an injury is received.—*Mundle v. Hill Manufacturing Company. (Supreme Judicial Court of Maine.) 30 At. Rep. 19 (235).*

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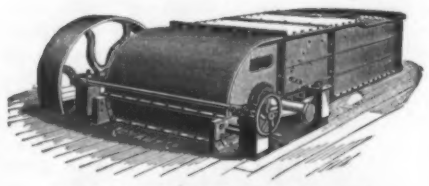

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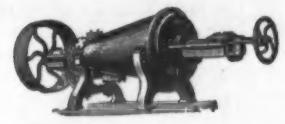

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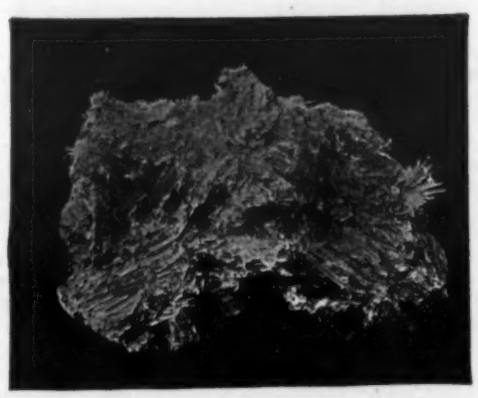

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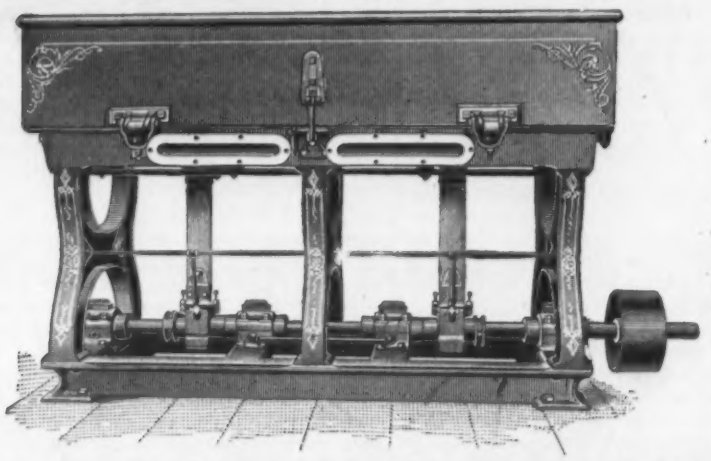

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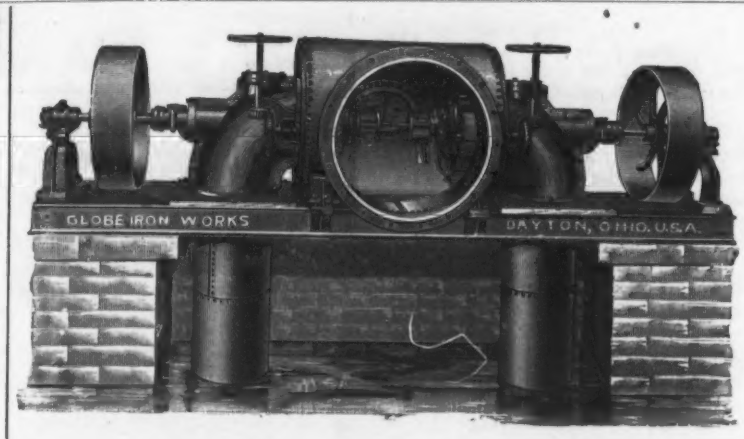

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Whole Gate,	16.06	119.17	141.58	205.27	79.76	Whole Gate,	16.33	128.00	134.18	199.56	80.50
¾ "	16.42	122.00	127.18	195.19	82.58	¾ "	16.56	134.80	120.85	188.14	83.09
½ "	16.78	117.33	112.60	175.74	82.18	½ "	16.59	129.33	104.85	162.89	82.77
¼ "	17.08	111.33	98.12	149.99	79.31	¼ "	17.13	125.25	92.76	142.40	79.21
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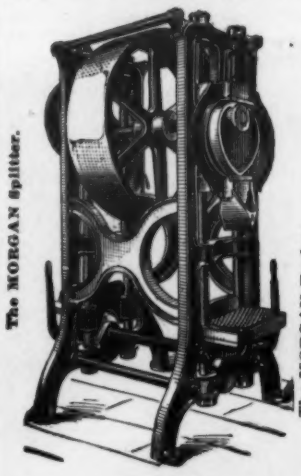
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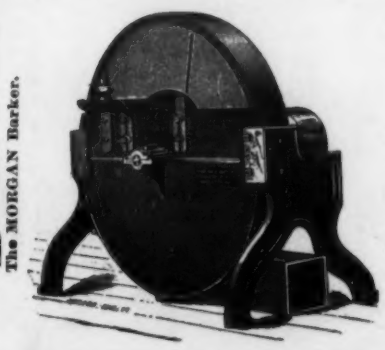
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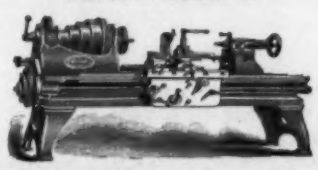

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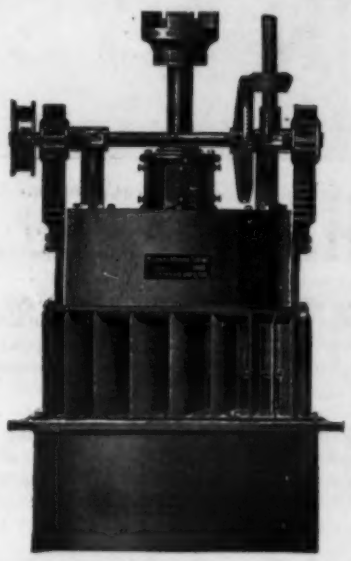

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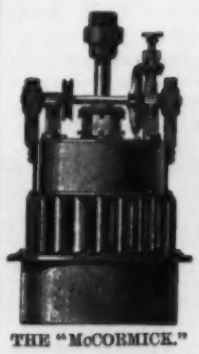
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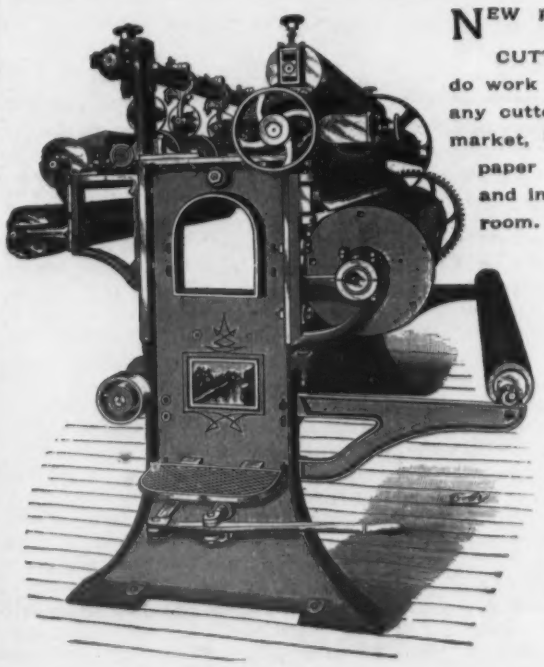

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How Is Your Steam Boiler?

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By James F. Hobart.

Seventh and Last Paper.

Having made sure that the inside and outside of the boiler, together with the setting, are in good condition, the inspector must turn his attention to the various attachments, which necessarily become a part of the boiler, as far as inspection is concerned. The water line glass, the gauge cocks, the steam gauge and the safety valve must all receive attention enough to make sure that they are in first-class condition. Before leaving the boiler, however, it is well to put a torch through the front hand hole and see what shape the shell and tubes are in at that part. A bit of candle on the end of a long strip of board makes a fair torch, but I prefer to tie a bunch of waste on the end of a pole or around the butt end of the tube scraper, and after putting oil on the waste to light it and run the brilliant torch thus made clear to the back end of the shell. Very interesting things are sometimes found in this way—a pair of overalls, some cold chisels, a hammer, a wrench or two and frequently a bushel or two of mud, either scattered over the bottom of the boiler or gathered in two heaps, one over the furnace, the other at the back end of the shell. Don't make the mistake of putting in the torch before you have examined the inside of the boiler. If you do you will have to go into the smoke and gas which remain in the boiler. Do this part last.

In looking at the attachments see that the water column is connected properly. There should be a pipe leading straightway to the boiler steam space from the top of the column, and another pipe doing the same at the bottom, but going below the water line always. All unnecessary bends, crooks and turns should be avoided in these pipes, and they *must not* be used for any other purpose. No branch must be taken out, even to supply a glue pot on a steam gauge. The pipe for that important attachment should always be tapped directly into the boiler, and never be taken from the main steam pipe or from a branch, but from the boiler itself. The gauge should be so connected through a goose neck or some other suitable arrangement that the hot steam cannot gain access to the spring. In other words, the gauge should be trapped so that the steam pipe will be always closed by a water seal. This prevents any derangement of the gauge, which is always liable to occur. However, the error is usually on the side of safety, as heating the spring weakens a gauge, and the reading shows more pressure than there really is; therefore the boiler is working under lighter pressure than is registered by the gauge.

The try cocks should be examined and kept in good condition always, and that can be done only by constant care and use. Gauge cocks kept clean and well packed will not leak every time that they are opened; if they do begin to leak, the fireman is apt to let them stay closed when once they become tight; this is dangerous, for the water line glass is not considered reliable by advanced engineers, and the best boiler insurance concerns require that the gauge cocks shall be kept always in good order and used frequently, not trusting entirely to the water line glass. I have seen boilers so piped that when the feed was on the water stood considerably higher in the glass than when the pump was not running. This is a source of danger, and should be particularly avoided.

The blow-off is liable to diseases peculiar to itself, aside from those of wasting, wrong location, &c., already described, the blow-off should always be provided with some kind of valve which is perfectly tight. Many a boiler has been burned by the water leaking out through a defective blow-off valve, and the possibility of accident in this direction is greater than many steam users ever imagine. For this reason a blow-off should never be piped into a sewer or a drain in such a manner that the end of the pipe cannot be seen at all times so as to see leakage when it exists. It is well, therefore, to let the blow-off pipe end in plain sight, in the boiler room if possible, and put on an extension when the boiler is to be emptied.

Sometimes such a form of blow-off pipe is not practicable, owing to surrounding conditions, but it is always possible to bring the blow-off pipe into the boiler room in plain sight and in a horizontal position. Then put a tee in the exposed portion of the pipe, the straightway openings being occupied by the feed pipe, and the branch, opening downward, to be closed by a tight fitting screw plug; then, when the blow-off pipe is not in use, let the plug be kept out of the tee, and any leakage of the blow-off will make itself known at once. If there are several boilers in battery, connected to the same blow-off, a second valve should be put on below the first or regular valve, and the tee should be located between the valves; then, if either of the other boilers is blown off, the water cannot back up through the pipe and escape into the boiler room. A better but more costly way is to replace the plug with a short bit of pipe and put another valve on the lower end of it. With this valve left open any blow-off leakage will be visible.

The kind of valve most suitable for blow-off use is an open question among steam engineers. Some, principally of the old school, claim that a plain plug cock is the best, as it will cut through dirt and scale when it is being closed, thus securing a tight closure when a globe or a straightway valve would fail. The globe valve advocates claim that the valve seat is so far above the bottom part of the valve cavity that dirt and scale will fall down there and allow the tight closing of the valve. On the other hand, the straightway valve believers argue that the plug does not go to the bottom of the cavity in their valve, thus leaving space there for dirt and scale; they also claim that the sliding motion of the gate in their valve can cut off dirt and scale just as well as the plug cock. Either globe or straightway valves will do better if inclined to an angle of 30° from the horizontal than if placed vertically; this is particularly the case in connection with blow-off valves. For globe valves the same is true for steam and water, as the flow is not trapped by water in the valves as it is when the stem is placed in a perpendicular position. No valve with a packed stem should be laid horizontally, because in that position the water of condensation works out through the packing, and that kind of water is much harder on both packing and valve than steam. The 30° angle is a cure for this, thus remedying more evils than one.

The steam gauge should be inspected, cleaned if necessary, and oiled if its action is in any way sluggish; then it should be tested by being put under pressure in connection with a gauge known to be correct. Such a gauge should be kept on hand for test purposes only, and it should be itself tested once in a while by comparison with a master gauge or a mercury column. A small hand test pump should be kept with the test gauge for working up pressure when comparing gauges; but if no pump is at hand, connect both gauges to a steam pump, and run the pressure gradually up and down as desired. If the gauge is located at a distance from the boiler, see that hydrostatic pressure does not cause a false reading. For instance, if the distant gauge is located 20 feet below the boiler water line, then, when the gauge pipe becomes filled with water, about 10 pounds will be added to the reading of the gauge. Sometimes a pipe extends from the boiler to the roof of the building and then descends to the gauge at or on the water level. In this case the effect will be the same; that vertical pipe will add about one-half as many pounds to the gauge reading as the pipe is feet in height.

The safety valve, besides the attention due it already described, should be tested at the safe working pressure allowed to the boiler to which it is attached. Provision should be made to prevent overloading, either by locking (if a spring valve) or by cutting off the lever beyond the proper position for the weight.

Among other important things to be looked after is the supply of feed water. Never permit a boiler to run without at least two ways of feeding. One feed arrangement is always liable to become disarranged, but that two methods should become inoperative at the same time is beyond possibility. The steam pump and injector do well together, and the exhaust injector and the power pump are efficient and cheap. Above all, remember that "eternal vigilance" is the price of safety, both in running and inspecting steam boilers.

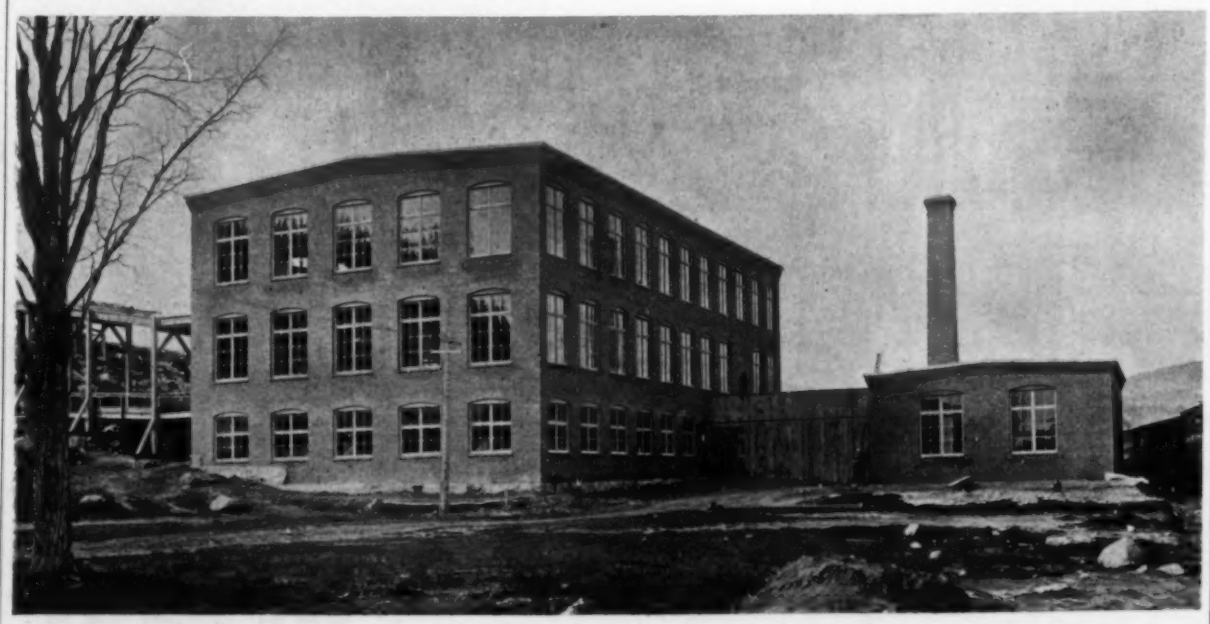
The Rumford Falls Woolen Company.

Where "Oxford" Felts are Made.

The illustration herewith presented is a view of the new mill of the Rumford Falls Woolen Company, Rumford Falls, Me., where "Oxford" felts are now being manufactured.

The idea of establishing such an enterprise at Rumford Falls was conceived last spring, and those interested found no difficulty in securing the co-operation of others when the Rumford Falls Woolen Company was organized with the following named officers: Col. S. P. Train, president; Charles D. Brown, treasurer; and these directors: J. Fred. Webster, Hugh J. Chisholm, C. A. Brown, A. G. Paine, Jr., Waldo Pettengill, and H. G. Fuller, manager. Among the stockholders are several of the leading paper manufacturers of New England.

Ground was broken for the foundations of the mill on May 26, 1894, and on October 18—in less than five months—the first felt was finished.



New Mill of the Rumford Falls Woolen Company, Rumford Falls, Me., Manufacturer of "Oxford" Felts.

The mill is near the easterly end of the middle canal and has a railroad siding on both sides to facilitate the handling of the raw material needed in the manufacture of felts.

The main building is 54 feet wide and 100 feet in length, three stories high and substantially built of brick. The boiler house, containing the picker room, is 32 feet long and 42 feet wide, also of brick, and is connected with the main building by a covered passageway. A 50 horse power horizontal Roberts boiler furnishes steam for heating purposes, while the motive power for the mill is supplied by a 50 horse power motor built by the General Electric Company. This motor is connected with the circuit of the Rumford Falls Light and Water Company. This woolen mill is one of the first to adopt the electric fluid for a motive power to run the necessary machinery to make paper felts. The three floors of the mill are well lighted by large and numerous windows on all four sides and is also supplied with about 150 incandescent lights for winter and evening work.

The first floor or basement is devoted to the storing, sorting and cleansing of wool. On the second floor the carding machines prepare the wool for spinning. It then goes to the third floor, where it is spun, woven, spliced and carefully inspected, and all imperfections remedied. It has now, in a rough state, assumed the proportions of a felt, and is next returned to the second floor, where it is fulled, cleaned and dried, and lastly leaves a machine which raises upon the surface a nap of any required degree—the felt now being completed and ready for market.

The plant is thoroughly constructed in every respect and its machinery equipment is of the very best, the looms having been made by the Knowles Loom Works, of Worcester, Mass., whose reputation for high grade machinery extends the world over. The mill is located and planned with a view to an extension on the south end, should business so require, and is well protected from fire by two hydrants, one on either side of the mill.

Charles D. Brown & Co., manufacturers and importers of paper, boards and paper makers' supplies, No. 156 Congress street, Boston, are the selling agents for the Rumford Falls Woolen Company's product, and the firm now has on display at its Boston office the first felt which the company turned out, and which will be kept and treasured as a souvenir—it being the first piece of woolen goods made at Rumford Falls, Me.

H. G. Fuller, manager of the plant, is a man well qualified for his duties by long service and experience in this business, having devoted his entire life since the age of sixteen to it, and consequently is thoroughly conversant with every detail, and has been ably assisted by calling into service the best workmen to be found.

With a new plant so thoroughly equipped with the best modern machinery, supplied with carefully selected stock and operated by the most skilled workmen "Oxford" felts will no doubt command the attention of pulp and paper makers and secure that favor always extended to goods of superior quality.

New in Elevators.

In no department of the patent office can you find a section more interesting than that which is alloted to the applicants for elevator improvements. Everything from an automatic brake to a positive self acting safety device can be found registered here, some of which have grown quite popular and have made large fortunes for their inventors. More than one-third, however, never receive life beyond their shelves, and lie only as a warning to other aspirants who would follow and vain would pose to revolutionize the trade. But, alas! how many succumb to inevitable end. "Try again;" how many ever succeed in reaching that goal that lies just beyond but always vanishes on the touch of a hand.

Up to the final introduction of electricity as a motor power the hydraulic and steam engines were the only practical means for operating elevators, and were so designed into two classes as to meet the general wants of a high and low speed service. The latter is altogether used for slow travel, light loads and for freight purposes where the travel is not wanted more than from 50 to 200 feet per minute up.

The high speed service is universally used for high office buildings and stores, and at the present date is as essential in completing one of these structures as to place a roof over the same, and where the low speed passenger service would be as much out of place as a cow would be hitched to a Broadway car. The required speed of the passenger car is from 300 feet up, and is brought about by means of a hydraulic power being forced against a set of dividing sheaves, supporting a hoisting rope which is wound and rewound around a corresponding set of stationary sheaves directly opposite, to assure a lengthening and shortening of the hoisting rope as the dividing sheaves are acted upon.

There are defects as well as virtues connected with this system, not to speak of the time, labor and large expense to maintain it. Thousands of dollars have been expended by companies and inventors to devise a machine that would operate with less expense, and some of the most peculiar, as well as ingenious, designs have come to light, two of which, however, are more deserving than the rest, viz., the Buckley and the Sprague-Pratt machines.

The Buckley machine, which is now being constructed, is entirely of new pattern and origin. It is believed to have the merits which have long been wanted to successfully challenge the hydraulic service. No elaborate machinery, large pumps, cylinders, &c., are necessary in this new system; touch the button and the electric motor is at once energized, and it is claimed that all the virtues of the hydraulic are attained, while many of the minor defects have been overcome and put aside. Instead of the large cylinder and its attachments to operate the dividing sheaves, an ordinary V thread screw and an anti-friction nut are employed, having an electric motor at one end of the screw shaft to move the carriage, or nut, up and down the frame pieces, which also serve for a guide for same. The most ingenious part of this invention is the nut, which is composed of four annular grooved rollers, so placed around and seated into the threads of the screw as to turn with the movement of the same. This action picks up the greater part of the friction and centres the same at the end of the roll bearings, and at this point is controlled by hard steel balls revolving between hard steel plates, thus securing a more perfect roller bearing; when worn these small plates can be renewed at short notice and the machine made ready within two hours. Altogether it is believed to be the best system that has ever faced the problem of competition with the expensive hydraulic system.—*Textile World.*

Leakage of Steam Plants.

Waste of steam by leakage is a thing which may be expected in all steam plants, but it is too apt to obtain excessive proportions where it is believed to be trifling. Although attention has often been called to the matter, its importance cannot be too forcibly reiterated. Excellent engine performance may be secured by providing the required economical type of construction, and the highest economy in the generation of steam is obtainable by careful attention to the best principles of combustion and operation of boilers; but the consumption of coal is sure to be greater than it ought to be if some of the steam escapes from the plant by leakage, either from the boilers themselves, the piping or stop valves or by passage through leaking valves and pistons in the engine cylinders.

This very thing is one of the greatest objections to the use of high pressures, and it is in plants where high pressures are in vogue that the utmost vigilance should be exercised in this important matter. An instance may be referred to where leakage was going on to an excessive degree when it was least suspected. An excellent arrangement of steam piping was provided, says the *Engineering Record*, in which all the water of condensation found its way by gravity to one low point, where a separator was applied, the drain pipe of which led through a trap to an open exhaust steam heater. The steam trap, influenced by the action of the pressure, which in this case was extremely high, failed to work efficiently, and it allowed a continuous escape of steam unchecked and, with the arrangement of discharge noted, undetected. The loss of steam at this one point was far in excess of any saving resulting from the high pressure which was carried, and vitiated the economy of a plant which would otherwise have boen unexcelled.

It would well repay the engine man in charge of a power plant if a thorough examination were made for leakage at regular intervals of, say, once a month. It is an easy matter to determine the amount of leakage from the boilers and steam piping by observing the fall of water in the gauge glasses when the engine is stopped and the usual steam pressure maintained. If there is no loss the full height of water should be maintained continuously, or with practically no reduction. On the same occasion the valves and pistons of the engine should also be examined for leakage, which can easily be tried by the indicator cock test, so far as this applies, and by the time method when the other is unavailable. With systematic attention to these matters loss of steam by leakage could not go unawares for a great length of time, and when found the proper remedy could be applied for its prevention.—*Manufacturers' Gazette.*

Belt Transmission.

Computation of horse power in the following table is based on the assumption that the belts will run on pulleys of medium size, and nearly horizontally, and the semi-circumference of the smallest pulley has been regarded as the arc of contact; and while a double belt may under favorable conditions transmit twice the power of a single belt, yet for ordinary work an increase of 50 per cent. is considered a fair allowance:

Width of Belt in Inches.	Horse Power per 100 feet Velocity of Belt.	
	Single Belt.	Double Belt.
1	.09	.18
2	.18	.36
3	.27	.55
4	.36	.73
5	.45	.91
6	.55	1.10
7	.64	1.28
8	.73	1.46
9	.82	1.64
10	.91	1.82
11	1.00	2.00
12	1.09	2.18
14	1.27	2.55
16	1.45	2.90
18	1.64	3.28
20	1.82	3.64
22	2.00	4.00
24	2.18	4.36
28	2.55	5.10
32	2.91	5.82
36	3.27	6.54
40	3.64	7.27

All belts should run slack, and if more power is required increase the belt speed by using larger pulleys.

Paper Mill Designations.

Following is a continued list of named paper mills in America. In order to secure the post office address—which in many cases is more or less remote from the mill itself—and other particulars, reference to LOCKWOOD'S DIRECTORY OF THE PAPER, STATIONERY AND ALLIED TRADES is indispensable.

Pulp and Chemical Fibre Mills.

UNITED STATES.

"A" Mill—Willamette Pulp and Paper Co., Oregon City, Ore.
Augusta Pulp Mill—Cushnoc Fibre Co., Augusta, Me.
Beaver Falls Pulp Mill—James P. Lewis, Beaver Falls, N. Y.
Birkett Pulp Mill—Birkett Mfg. Co., Birkett. Mich.
"B" Mill—Willamette Pulp and Paper Co., Oregon City, Ore.
Canton Pulp Mills—Poland Paper Co., Canton, Me.
Cardigan Pulp Mill—Mason-Perkins Paper Co., Bristol, N. H.
Carter Pulp Mill—Estate of Richard Carter, Greig, N. Y.
Cascade Mill—J. D. Mulrenan, Hadley, N. Y.
Cascade Mill—Cascade Wood Pulp Co., Lockport, N. Y.
Centennial Mill—Smith Paper Co., Lee, Mass.
Champlain Mills—New York and Pennsylvania Co., Willsborough, N. Y.
Chasm Mill—Adirondack Water Power and Paper Co., Malone, N. Y.
Chemical Fibre Mill, Catawissa Fibre Co., Catawissa, Pa.
Chemical Fibre Mill—Hudson River Water Power and Paper Co., Mechanicsville, N. Y.
Columbian Pulp Mill—Lewis, Slocum & Lefevre, Beaver Falls, N. Y.
Chemical Fibre Mill—Ticonderoga Pulp and Paper Co., Ticonderoga, N. Y.
Chemical Fibre Mill—S. D. Warren & Co., Cumberland Mills, Me.
"C" Mill—Lake George Paper Co., Ticonderoga, N. Y.
"C" Mill—Remington Paper Co., Watertown, N. Y.
Delaware Mills—Jessup & Moore Paper Co., Wilmington, Del.
"D"—Lake George Paper Co., Ticonderoga, N. Y.
"D"—Remington Paper Co., Watertown, N. Y.
Dunmore Mill—Dunmore Pulp Co., Salisbury, Vt.
"E"—Remington Paper Co., Watertown, N. Y.
"F"—Remington Paper Co., Watertown, N. Y.
Fort Edward Pulp Mill No. 2—Glens Falls Paper Mill Co., Fort Edward, N. Y.
Geddes Pulp Mill—Ypsilanti Paper Co., Ypsilanti, Mich.
Glen Fibre Mill—George West, Ballston Spa, N. Y.
Green Mountain Pulp Mill No. 1—Green Mountain Pulp Co., Middlebury, Vt.
Green Mountain Pulp Mill No. 2—Green Mountain Pulp Co., Middlebury, Vt.
Gorge Mill—Adirondack Water Power and Paper Co., Malone, N. Y.
Independence Street Pulp Mill—Cleveland Paper Co., Cleveland, Ohio.
Jackson Mill—Jackson Pulp Co., Jackson, Mich.
Jay Bridge Pulp Mill—Alvin Record, Jay, Me.
Jefferson Pulp Mill—Jefferson Paper Co., Black River, N. Y.
Lake Sunapee Mill—Emerson Paper Co., Sunapee, N. H.
Lincoln Mill—Katahdin Pulp and Paper Co., Lincoln, Me.
Little Badger Mill—Brokaw Pulp Co., Kaukauna, Wis.
Livermore Falls Pulp Mill—Alvin Record, Livermore Falls, Me.
Memphis Mill—Tennessee Fibre Co., Memphis, Tenn.
Newfound Pulp Mill—Mason-Perkins Paper Co., Bristol, N. H.
Niagara Mill—Smith Paper Co., Lee, Mass.
No. 1 Pulp Mill—Atlas Paper Co., Appleton, Wis.
No. 1 Pulp Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
No. 1 Mill—Falls Mfg. Co., Oconto Falls, Wis.
No. 1 Mill—Oscar Thilmany, Kaukauna, Wis.
No. 1 Mill—Penobscot Pulp and Paper Co., Veazie, Me.
No. 1 Mill—Saranac River Pulp and Paper Co., Plattsburgh, N. Y.
No. 1 Pulp Mill—Winnipiseogee Paper Co., Franklin, N. H.
No. 1 Sulphite Mill—Atlas Paper Co., Appleton, Wis.
No. 2 Pulp Mill—Atlas Paper Co., Appleton, Wis.
No. 2 Pulp Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
No. 2 Mill—Falls Mfg. Co., Oconto Falls, Wis.
No. 2 Mill—Ohio Paper Co., Niles, Mich.
No. 2 Mill—Oscar Thilmany, Kaukauna, Wis.
No. 2 Mill—Penobscot Pulp and Paper Co., Veazie, Me.
No. 2 Mill—Saranac River Pulp and Paper Co., Plattsburgh, N. Y.
No. 2 Pulp Mill—Winnipiseogee Paper Co., Franklin, N. H.
No. 3 Mill—Falls Manufacturing Co., Oconto Falls, Wis.
No. 3 Pulp Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
No. 3 Pulp Mill—Winnipiseogee Paper Co., Franklin, N. H.
No. 3 Mill—Stone Fort Paper Co., Manchester, Tenn.
No. 4 Pulp Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
No. 4 Pulp Mill—Winnipiseogee Paper Co., Franklin, N. H.
No. 5 Pulp Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
No. 6 Pulp Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
No. 7 Pulp Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
Park Pulp Mill, Marinette and Menominee Paper Co., Marinette, Wis.
Passumpsic Pulp Mill—Passumpsic Pulp Co., Passumpsic, Vt.
Plattsburgh Pulp Mill, Allen & Sherman, Plattsburgh, N. Y.
Pulp Mill—Balfour, Alexander & Son, Philadelphia, Pa.
Pulp Mill—Battenkill Paper Co., Middle Falls, N. Y.
Pulp Mill—Catawissa Fibre Co., Catawissa, Pa.
Pulp Mill—Combined Locks Paper Co., Appleton, Wis.
Pulp Mill—Eagle Paper Co., Franklin, Ohio.
Pulp Mill—Farley Paper Co., Farley, Mass.
Pulp Mill—F. Hickman & Co., Freeport, Ia.
Pulp Mill—Franklin Paper Co., Franklin, Ohio.
Pulp Mill No. 1—Glens Falls Paper Mill Co., Glens Falls, N. Y.
Pulp Mill—Great Bend Paper Co., Great Bend, N. Y.
Pulp Mill — Hennepin Paper Co., Little Falls, Minn.
Pulp Works—Herkimer Paper Co., Lyons Falls, N. Y.
Pulp Mill—Hollingsworth & Whitney Co., Winslow, Me.
Pulp Mill—Hutcheson Mfg. Co., Banning, Ga.
Pulp Mill—Indiana Pulp and Paper Co., Marion, Ind.
Pulp Mill—James Ramage Paper Co., Monroe Bridge, Mass.
Pulp Mill—John E. Waller, Skaneateles, N. Y.
Pulp Mill—Kimberly & Clark Co., Kimberly, Wis.
Pulp Mill—Marinette and Menominee Paper Co., Menominee, Mich.
Pulp Mills—Moose River Paper Co., Lyons Falls, N. Y.
Pulp Mill—New York and Pennsylvania Co., Lock Haven, Pa.
Pulp Mill—Niagara Wood Paper Co., Niagara Falls, N. Y.
Pulp Works—Ohio Paper Co., Miamisburg, Ohio.
Pulp Mills—Otis Falls Pulp Co., Livermore Falls, Me.
Pulp Mills—Outterson Paper Co., Brownville, N. Y.
Pulp Mills—Park Falls Lumber and Pulp Co., Park Falls, Wis.
Pulp Mill—Raleigh Paper Co., Neuse, N. C.
Pulp Mill—Raquette River Paper Co., Potsdam, N. Y.
Pulp Mill—Telulah Paper Co., Appleton, Wis.
Pulp Mill—Train, Smith & Co., Bristol, N. H.
Pulp Mill—Victoria Paper Mills Co., Fulton, N. Y.
Pulp Mill—Wagman, Thorp & Co., Fort Miller, N. Y.
Quinnesec Mill—Quinnesec Falls Co., Quinnesec, Mich.
Raquette River Pulp Mills—O. E. Martin, Norwood, N. Y.
Record Pulp Mill—Singerly Pulp and Paper Co., Elkton, Md.
Riverside Mill, No. 1—Berlin Mills Co., Berlin Falls, N. H.
Riverside Mill—James P. Lewis, Beaver Falls, N. Y.
Standard Pulp Mill—Standard Pulp Mill Co., Oswegatchie, N. Y.
Stevenson Pulp Mill—Wm. Wayne, Stevenson, Ala.
Sulphite Fibre Mill—Combined Locks Paper Co., Appleton, Wis.
Sulphite Fibre Mill—Hudson River Water Power and Paper Co., Mechanicsville, N. Y.
Sulphite Fibre Mill—Kimberly & Clark Co., Kimberly, Wis.
Sulphite Fibre Mill—Wilkinson Bros. & Co., Derby, Conn.
Sulphite Mill—Badger Paper Co., Kaukauna, Wis.
Sulphite Mill—Fall Mountain Paper Co., Bellows Falls, Vt.
Sulphite Mill—Hudson River Pulp and Paper Co., Palmer's Falls, N. Y.
Sulphite Mill—Marinette and Menominee Paper Co., Marinette, Wis.
Sulphite Mill—Richards Paper Co., So. Gardiner, Me.
Sulphite Mill—Raquette River Paper Co., Potsdam, N. Y.
Sulphite Mill—The Glen Mfg. Co., Berlin Falls, N. H.
Union Pulp Mill—Henry Spicer & Sons, Carthage, N. Y.
Union Pulp Mills—Robert Pride, Kaukauna, Wis.
Warrensburgh Pulp Mills—Schroon River Pulp Co., Warrensburgh, N. Y.
West Carthage Pulp Mill—A. E. Maxwell, Carthage, N. Y.
West End Pulp Mill—F. E. Robinson, Carthage, N. Y.
Weymouth Pulp Mill—Weymouth Mfg. Co., Weymouth, N. J.
White River Falls Pulp Mill—George Danielson, Ashland, Wis.
Wilkinson Pulp Mill—Hutcheson Mfg. Co., Banning, Ga.
Wood Pulp Mill—New York Paper Co., York Haven, Pa.
Wood Pulp Mill—P. C. Cheney & Co., Manchester, N. H.

(To be continued.)

Experiments with Superheated Steam.

In March and April, 1893, a series of experiments on the relative consumption of steam and fuel with saturated and superheated steam was carried out by the Alsace Union of Boiler Owners. The experiments extended over a period of six weeks. The boiler installation consisted of five cylindrical boilers, each with three heating tubes. Each boiler had 640 square feet of heating surface and 27.8 square feet of grate. The firing was from below, and the boilers were designed for a pressure of 12 atmospheres. On the last boiler was fitted a Green's economizer, heated by the waste gases from the five boilers and from an Uhler's superheater. The steam engine was horizontal, triple expansion, with Frikart

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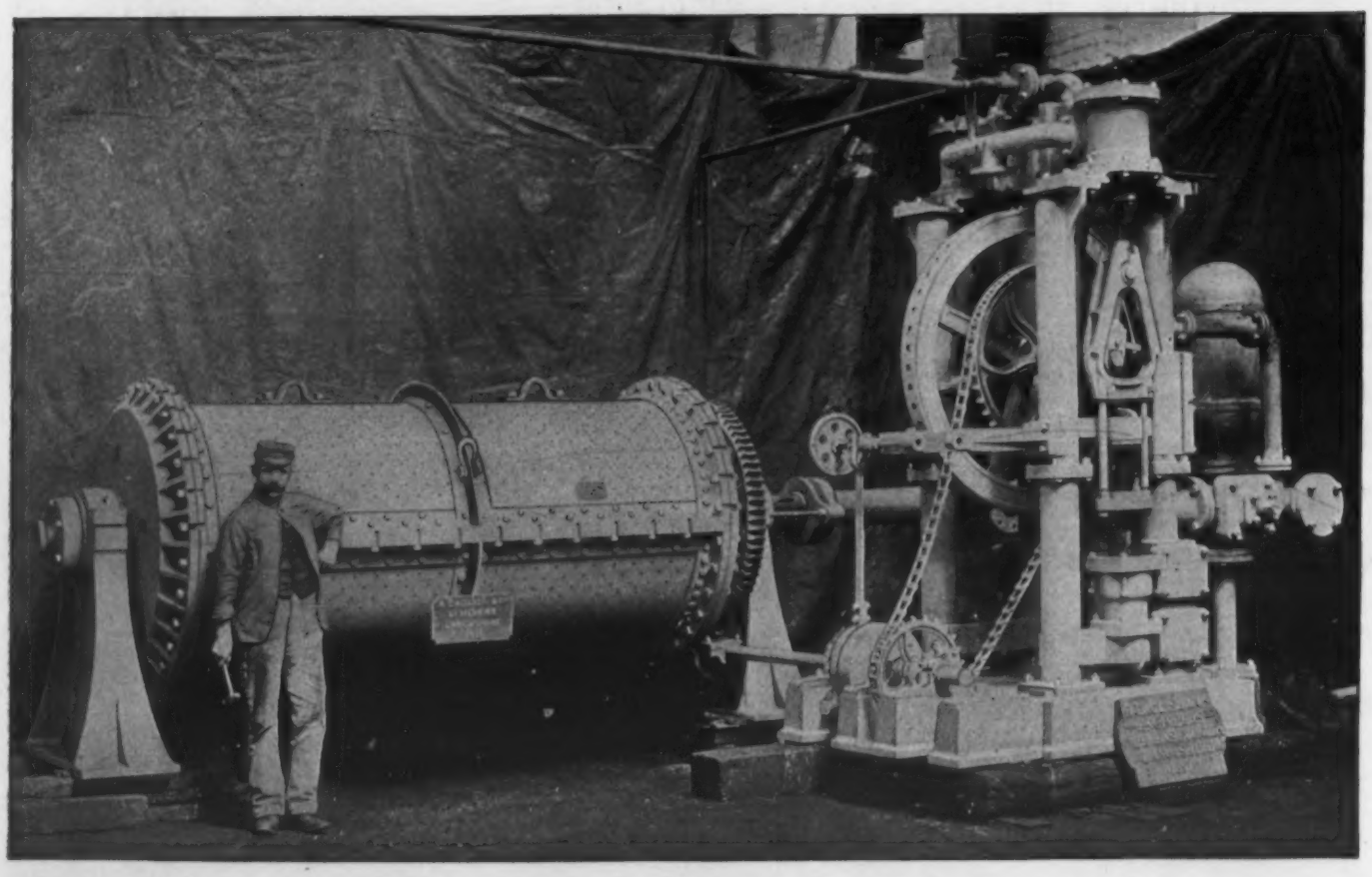

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valve gear, the high pressure and intermediate cylinders on one side, the low pressure cylinder and condenser on the other side, behind each other. The diameters of the cylinders were 18.8 inches, 28 inches and 48 inches respectively, the stroke was 56 inches, and the number of revolutions per minute 70. The principal results are exhibited in two tables, and the deductions made are :

1. Theoretically it has never been denied that superheated steam should give a higher efficiency than saturated, yet, from fear lest the cylinder should be damaged by the high temperature, for years no experiments were made with superheated steam. Now, however, after numerous experiments, the oldest engine can safely be used with superheated steam without injury, the economy being greater than with saturated.

2. In installing a superheater care must be taken that the advantages gained are not lost either by less perfect combustion or by greater radiation losses ; the cost of the superheater must, of course, not exceed the saving obtained in coal consumption. The superheater should be connected with the boiler, so that both can be fired from the same furnace. After leaving the superheater the gases should come in contact with the heating surface of the boiler and, lastly, with the heating surface of the economizer.

3. The use of superheated steam does not exclude the use of steam jacket. Though both superheating and steam jackets were used, yet condensation in the high pressure cylinder occurred.

4. The two different kinds of coal used gave different results.

5. The use of low pressure, 7½ atmospheres, did not give such good results as the use of high pressure, 11½ atmospheres.

Paper Mill Pumps.

Paper makers and pulp makers interested in pumps will find the illustrated catalogue of the Knowles Steam Pump Works of no little value. Power pumps for paper and pulp mills are a specialty with them, and are varied in construction to best serve the different demands and to produce the best results under the varied conditions. Such pumps are classed by the firm under one head, and in the catalogue referred to only paper and pulp mill pumps are described.

The Knowles Steam Pump Works claim that their pumps have no equal, and they point with pride to their long years of success and the general satisfaction which their pumps give wherever used.

The Knowles Steam Pump Works stand behind each pump put into a mill, and they guarantee it in every particular. So long has been the connection of the Knowles Steam Pump Works with paper and pulp manufacturers, and so extensive has been their business, and so earnestly have they sought the co-operation of those personally connected with the paper and pulp industry, that the concern feels itself perfectly able to build pumping machinery to fill every requirement.

Improved Ream Cutter.

The accompanying cut presents an illustration of an improved ream or bundle cutter, manufactured by the Dilts Machine Works, Fulton, N. Y., and brought out by the new management of that concern. It has new, patented features in its clamping device, and is strong and of simple construction.

Improved Ream or Bundle Cutter.

This machine will, it is said, do as rapid, heavy and accurate work as any cutter in the market, having its weight well distributed, and not calling for repairs. Little power is required to operate it, as the clamp uses no power on the downward stroke. In point of workmanship and general finish it ranks with any other machine of its class, while, because of the simplicity of its construction, it is offered at a low price.

This cutter has heavy frames and arms and the drive is simple and strong. The automatic clamp is said to be the only perfect clamping device and is not a friction clamp; but is operated by a cam on the crank shaft.

The cutter may be speedily operated by hand when it is desired to cut bundles of varying thickness. The knife back is adjustable and the knife is drilled with two sets of holes, so that it may be used until ground down to 4½ inches in width ; it rises 12½ inches. The cutter stops automatically after the cut, with the knife raised. The 44 inch cutter measures 45 inches between the housings ; it will cut and square a bundle from 2 inches to 44 inches square. The knife is 45¾x7 inches by ⅝ in thickness. The 44 inch cutter weighs 4,000 pounds.

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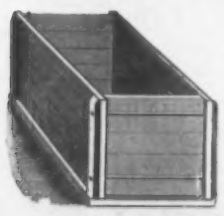

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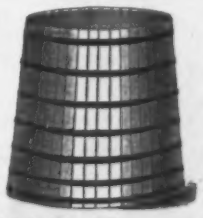

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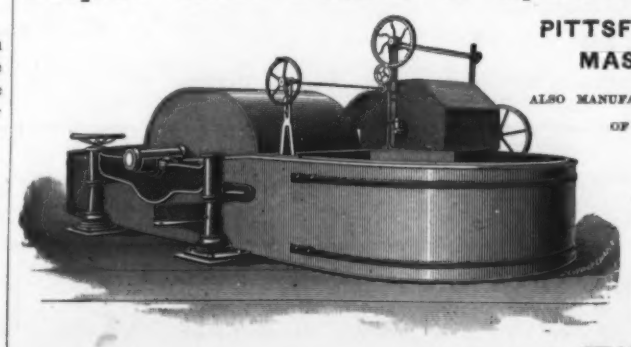

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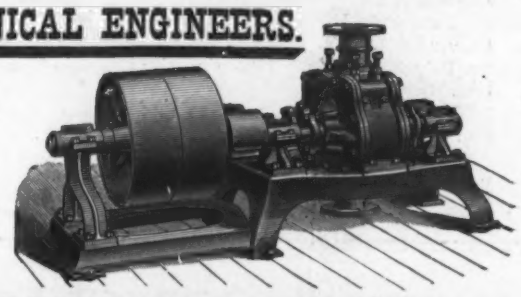

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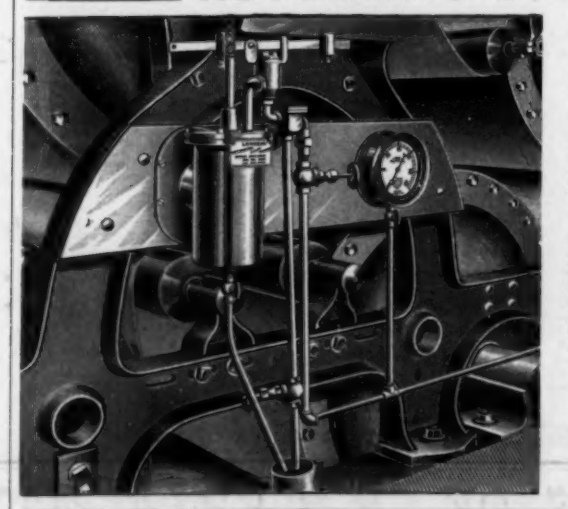

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Globe Paper Co	Brownville, N. Y	2	..
Union Pulp Co	Carthage, N. Y	1	..
Frontenac Paper Co	Dexter, N. Y	1	..
Leonard & Gilmore	Dexter, N. Y	1	..
Outterson Paper Co	Brownville, N. Y	3	3
Oswego Falls Paper Co	Fulton, N. Y	5	5
Gouverneur Wood Pulp Co	Gouverneur, N. Y	4	4
Knowlton Paper Co	Watertown, N. Y	1	..
Ontario Paper Co	Watertown, N. Y	5	5
Herkimer Paper Co	Lyons Falls, N. Y	4	3
G. H. P. Gould	Port Leyden, N. Y	1	..
Gould Paper Co	Port Leyden, N. Y	3	2
Racquette River Pulp Co	Colton, N. Y	3	..
Sparks Mfg. Co	Hamburg, N. Y	1	..
Charles Callender	Glendale, Mass	3	2
Merrimac Paper Co	Lawrence, Mass	2	2
Connecticut Paper Co	Holyoke, Mass	1	..
Carew Mfg. Co	South Hadley Falls, Mass	2	2
Rice, Barton & Fales	Worcester, Mass	5	2
Eaton, Dikeman & Co	Lee, Mass	1	..
Fall Mountain Paper Co	Bellows Falls, Vt	13	3
Wyman Flint & Sons	Bellows Falls, Vt	3	2
National Metal Edge Box Co	Readsboro, Vt	1	..
Glen Mfg. Co	Berlin Falls, N. H	10	3
Wilder & Co	Ashland, N. H	1	..
Umbagog Pulp Co	Livermore Falls, Me	2	..
Bangor Paper Co	Bangor, Me	4	..
Jay Paper Co	Jay, Me	1	..
White & Wells	Waterbury, Conn	2	2
St. Cloud Paper Co	St. Cloud, Minn	1	..
Columbian Paper Co	Buena Vista, Va	2	..
Anderson Paper Co	Anderson, Ind	3	2
Kaukauna Paper Co	Kaukauna, Wis	1	..
Willamette Pulp and Paper Co	Oregon City, Ore	13	6
California Paper Co	Agnew, Cal	1	..
Tennessee Pulp Co	Memphis, Tenn	1	..
Estate of Richard Carter	Glendale, N. Y	1	..
Charles Wackerhagen	Canaan Four Corners, N. Y	1	..
Smeallie, Phillips & Co	Amsterdam, N. Y	1	..
O. E. Martin	Norwood, N. Y	1	..
Jefferson Paper Co	Black River, N. Y	3	3
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Victoria Paper Co	Fulton, N. Y	2	2
Philip McGuire	Forestport, N. Y	1	..
Hartland Paper Co	Middleport, N. Y	1	..
Standard Pulp Co	Jennie s Falls, N. Y	3	..
Bacon Paper Co	Lawrence, Mass	1	..
Watertown Paper Co	Watertown, N. Y	3	..
Alpena Sulphite Pulp Co	Alpena, Mich	4	3
Hollingsworth & Whitney	Winslow, Me	4	4
Fulton Paper Co	Fulton, N. Y	2	2
Lyonsdale Paper Co	Lyonsdale, N. Y	1	..
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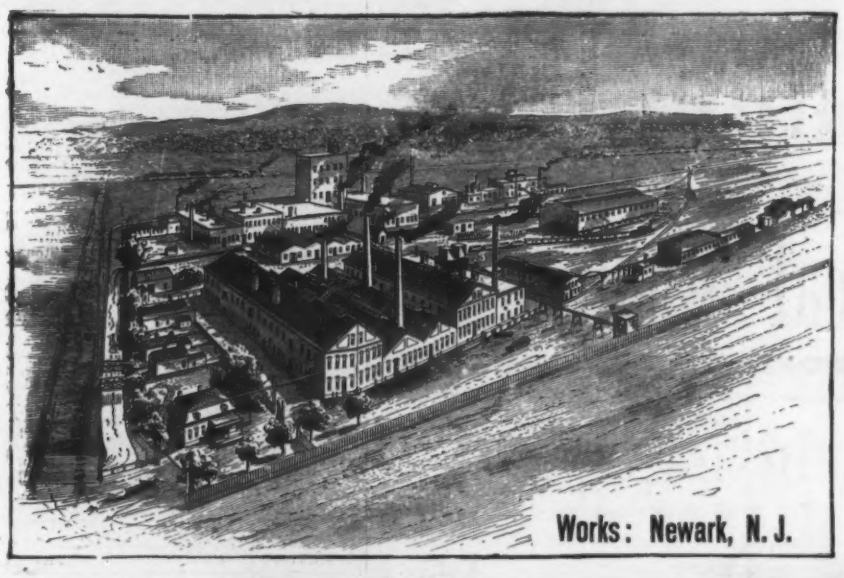
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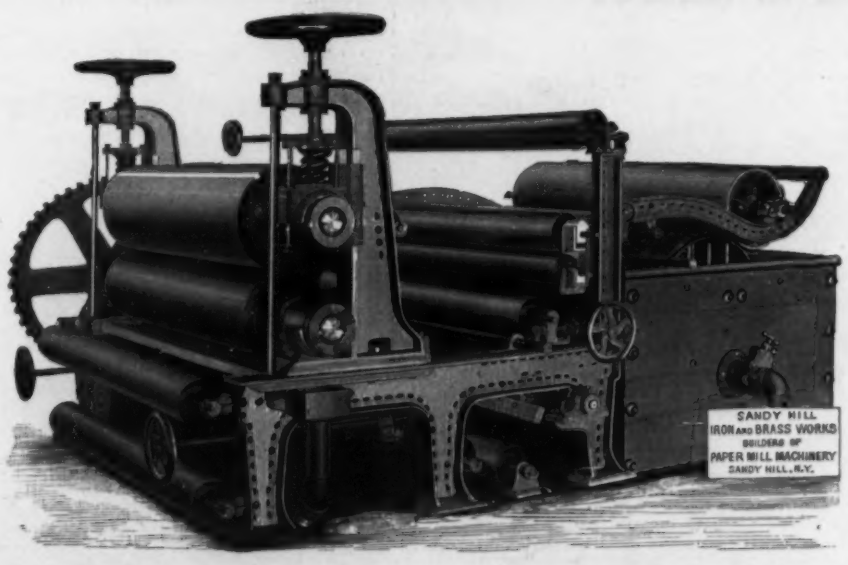

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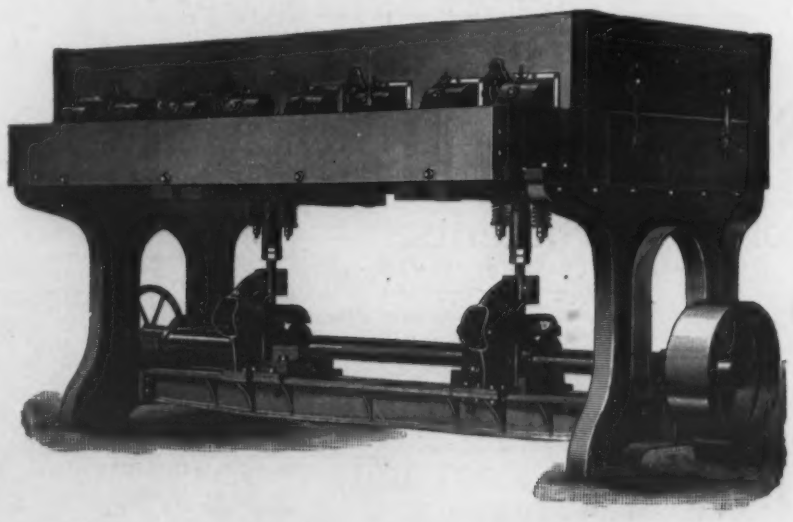

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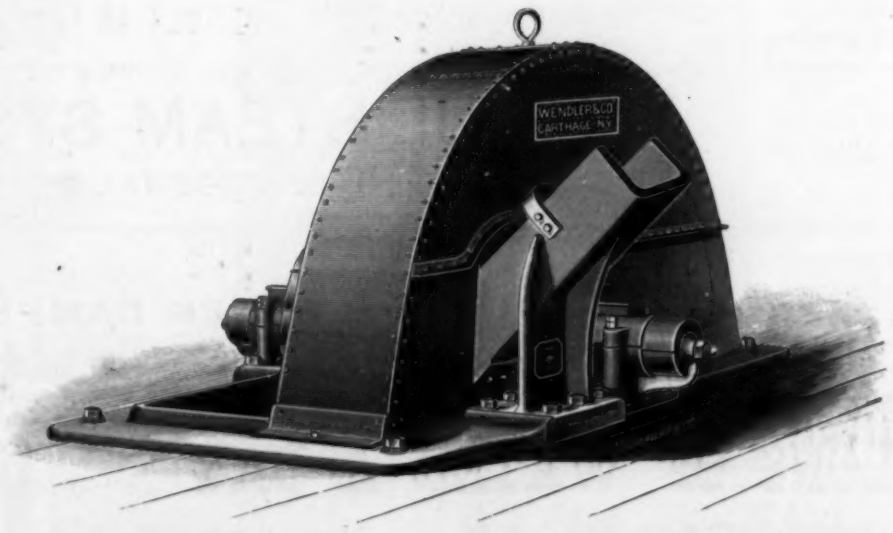

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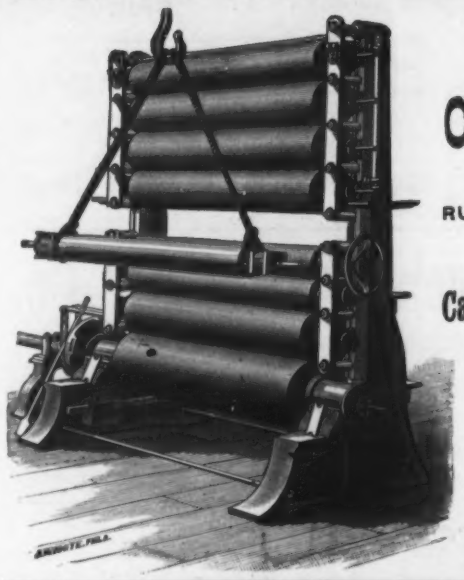

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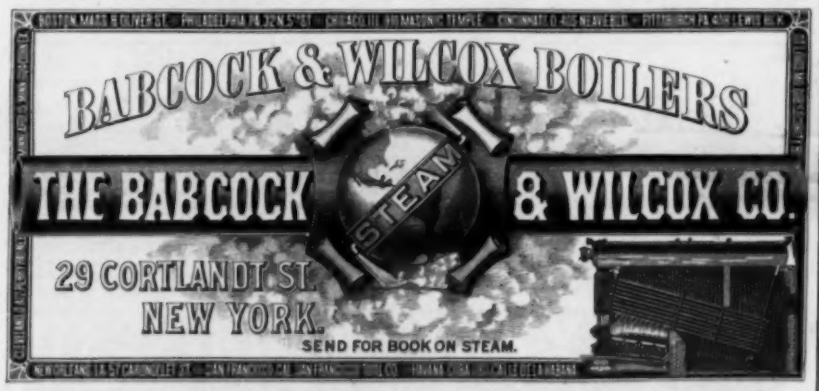

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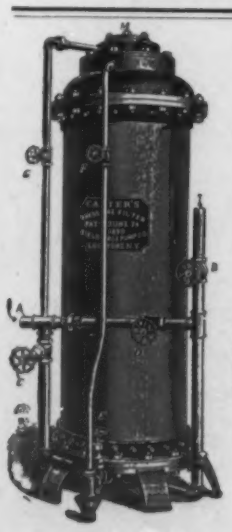

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As years passed it became *the* standard work, and for the past decade copies have sold at large prices, often as high as $30 each, and occasionally for more money. The original book consisted of 422 pages, 8¼ by 11 inches in size.

Mr. Hofmann returned to Germany more than eighteen years ago and settled in Berlin. He established *The Papier Zeitung*, and in due course, about seven years ago, began to write his second and latest Treatise. Thus far he has printed and published probably 1,200 pages in German, and in parts of forty-eight pages, including cover, profusely illustrated by wood cuts. When finished the book will consist of about 1,600 pages (pages size same as in first book), illustrated by 1,500 wood cuts.

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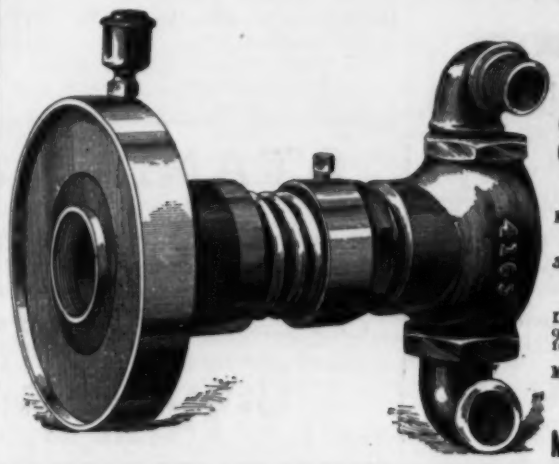

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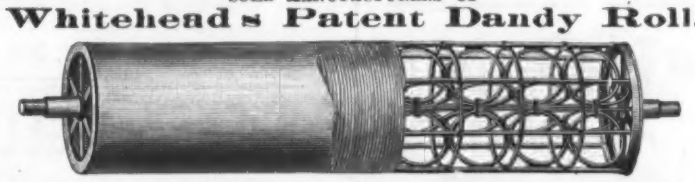

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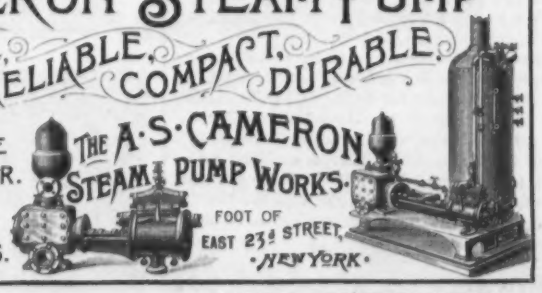

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